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CONTENTS

PAGE

TOTTENHAM, THE REV. C. E., M.A., F.R.E.S. Studies in the genus *Philonthus* Stephens (COLEOPTERA : STAPHYLINIDAE)—Parts II, III, and IV. . . . . 153–195, 59 figs.

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STUDIES IN THE GENUS *PHILONTHUS* STEPHENS (COLEOPTERA : STAPHYLINIDAE).

PARTS II, III, AND IV.

By the Rev. C. E. TOTTENHAM, M.A., F.R.E.S.

(*University Museum of Zoology, Cambridge.*)

Manuscript received 4th December, 1953.

(Read 3rd November, 1954.)

With 59 Text-Figures.

CONTENTS.

PAGE

1. INTRODUCTION AND ACKNOWLEDGMENTS 153
2. PART II : THE AFRICAN SPECIES OF THE *LONGICORNIS* GROUP . . 154
3. PART III : SOME NEW OR LITTLE-KNOWN AFRICAN SPECIES . . 168
4. PART IV : THE SPECIES OF THE *THERMARUM* GROUP (*GABRONTHUS* GEN. N.) 178

1. INTRODUCTION.

In Part I of this work (1949, *Trans. R. ent. Soc. Lond.* **100** : 291–362) I described a number of new African species of the genus *Philonthus* Stephens and also figured the aedeagus of many other species. The present paper, which may be regarded as a continuation of the former work, is divided into three parts.

Part II deals with the African species of the *longicornis* group. These were omitted from Part I, as therein stated, owing to lack of sufficient material. Having now had the opportunity to study more material I seek to remedy this omission.

Part III contains the descriptions of several new species of African *Philonthus* and figures and descriptions of a few other species which were unknown to me, or known by the female only, at the time of writing Part I. A few corrections to Part I are also made.

Part IV concerns the African and Oriental species of the *thermarum* group, among which there has been much confusion. For these species, placed by some authors in *Philonthus* and by others in *Gabrius*, I am proposing the new genus *Gabronthus*.

ACKNOWLEDGMENTS.

I would like to express my gratitude to Mr. J. Balfour-Browne for allowing me to examine the material at the British Museum (Natural History), to Dr. K.

Delkeskamp of the Humboldt University Museum, Berlin, for his kindness in lending me the type of *Philonthus nitidicollis* Klug, to the late Dr. M. Cameron for kindly lending me a co-type of *G. meridionalis* Cameron, and to Mr. H. Last for the loan of a large number of specimens from his collection.

2. PART II.

The African species of the *longicornis*-group.

The species of the group are well characterised by the peculiar structure of the aedeagus. Jarrige (1947, *Ann. Soc. ent. Fr.* **116** : 70), referring to this organ, suggests that a revision of the species ought to permit their being separated into a distinct subgenus. With this opinion I am thoroughly in agreement, and propose for the group the name **Spatulonthus** subgen. n., with *Philonthus longicornis* Stephens as the type species. The subgenus is represented in Europe by the three species *longicornis* Stephens, *agilis* Gravenhorst and *cochleatus* Scheerpeltz. In Africa it is represented by at least 18 species. The species of this group, so far as they are known to me, appear to be an assemblage of closely related species, and they form an aggregate which is both convenient from a purely taxonomic point of view, being distinguished by a clearly recognisable character, and which is also probably a true phylogenetic group. The species of *Spatulonthus* may all be distinguished by the form of the aedeagus. This organ has the median lobe flattened apically, in most of the species very broadly rounded and wide at the apex. The paramere is situated asymmetrically, i.e. with its apex to the right and reaching the right side of the median lobe (see Tottenham 1949, *loc. cit* : 346, figs, 125–127 and Part II, p. 161, figs, 4–6). The paramere is slender with a few pegs on its inner face at the extreme apex ; about half way down there is a distinct shoulder on the left side which at first might suggest that the asymmetry is due to the loss of the left branch of a furcate paramere. If, however, the paramere is detached from the median lobe, it will be seen that there is a similar shoulder on the other side and that this part of the organ is in itself more or less symmetrical ; these two shoulders correspond with the usual widening seen near the base of the parameres in the genus. The apparent asymmetry is due partly to the fact that the left shoulder lies on the horizontal face of the median lobe, whereas the right shoulder is bent round on to the vertical face, and partly to the fact that the whole paramere is asymmetrical in its position on the median lobe, being directed to the right instead of being placed centrally, as is usually the case. That this peculiarity of structure in the aedeagus is due to a shifting of position in the paramere and not to a flattening and torsion of the apex of the median lobe is confirmed by the fact that the internal sac is evaginated from the centre of the lower flattened face of the median lobe, in exactly the same position in which it would be if the paramere were centrally placed.

The study of the species of this subgenus is beset with many difficulties. Firstly, from the original descriptions it is impossible to tell which species belong to the group. I believe it would be true to say that, with regard to the African species which might belong to the subgenus, no author (with the exception of Jeannel and Paulian in their description of *P. tachyoryctides*) has given a sufficient

description to make it possible to say whether they do or do not belong. It has, therefore, only been possible to include in this paper those species which I have been able to examine. Secondly, original descriptions often contain discrepancies ; this is especially true with regard to length of the insect. The greatest difficulty, however, arises from the fact that in the subgenus the aedeagus is of little or no help ; except in the case of *P. peregrinus* Fauvel and *P. kasaiensis* Bernhauer, the differences in this organ, if they exist at all, are so slight as often to be of no practical help. The examination of sufficient material might, however, bring to light important differences in some cases.

Except where it has been possible to see the type, the most difficult task has been to assign a published name to the correct species. Named series, even when named by the same authority, often consist of several different species. Difficulties which have arisen in this connection will be discussed under the species concerned.

The object of this paper is to make an initial attempt to clear up some of the confusion which exists in the species of this subgenus ; no claim is made as to finality. Before the African species of the subgenus can be satisfactorily clarified there are, in my opinion, a number of essential requirements. (1) Long series must be examined from a large number of different localities ; (2) the specimens examined must be well and uniformly mounted and, above all, *clean* ; (3) antennae should be mounted, one to show the dorsal aspect and the other to show the lateral aspect ; they should be well extended and clear of gum, only the terminal segment being gummed down ; (4) the aedeagus should be extracted and mounted with the insect, care being taken that the apex of the median lobe lies flat, so that curvature, symmetry, etc., can be appreciated. For those who may have the opportunity for studying these African species, my studies lead me to suggest that useful information might be obtained by examining the aedeagus to see whether there are constant specific differences in the curvature of the apex of the median lobe, in the apical symmetry or asymmetry, in the bulging of the lobe near the middle, in the length of the paramere in respect to the apex of the median lobe, in the length of the paramere from its shoulder and, *after* all necessary observations, figures or measurements have been made, in an examination of the pegs at the apex of the paramere, for which purpose the paramere would have to be detached.

In the following key I have attempted to include all the species known to me, but some of the black species, especially those of the size of *longicornis* Stephens, do not lend themselves to a key, their differences being comparative, and the species being to some extent variable.

Key to the species.

1. Elytra entirely or almost entirely red, at the most the suture and extreme base black ; size moderately small, 5–10 mm. 2
   Elytra otherwise coloured 3
2. Aedeagus with the median lobe narrowed at apex, where it is bluntly pointed ; elytra reddish-yellow with only the suture narrowly black ; antennae long, with all the segments much longer than broad ; elytra moderately closely, rather deeply punctured
   6. **kasaiensis** Bernhauer

Aedeagus with the median lobe broadly rounded at apex; elytra red with suture and basal margin black; antennae short with penultimate segments only just longer than broad; elytra very closely and very finely punctured . . . . . 7. **vestigator** sp. n.

3. Elytra with a red patch, sometimes extensive, at the apical external angles 4

Elytra otherwise coloured 8

4. All the femora pale yellow-brown with a distinct narrow black streak along the lower margins; basal segment of antennae pale; elytra with a reddish-yellow patch on each at the apical external angles, which sometimes extends narrowly along the apical margin to the suture. 10–11 mm. . . . . 1. **ugandae** Bernhauer

Hind and middle femora dark or, if brown, without a clearly defined black edge and then the species small 5

5. Size larger, as large as *longicornis* Stephens; first segment of antennae black; apical patch on each elytron red and extensive, often covering at least half the elytron . . . . . 2. **bestialis** Bernhauer

Size smaller, distinctly smaller than *longicornis* 6

6. Antennae with penultimate segments not or only just longer than broad; apical patch on elytra less extensive; pronotum without evident ground sculpture . . . . . 3. **bisignatus** Boheman

Antennae slender with penultimate segments much longer than broad; elytral patches more extensive, often reaching beyond the middle; pronotum with distinct fine ground sculpture 7

7. Antennae entirely black; legs black, at most with the femora and tarsi very feebly brownish; pronotum narrower in proportion to its length . . . . . 5. **deleterius** sp. n.

Antennae brownish black or, if blackish, with the basal segment lighter; legs not entirely black, the femora and tibiae distinctly yellowish brown or brown; pronotum broader in proportion to its length 4. **delusor** sp. n.

8. Elytra black with a clearly defined narrow yellow apical margin; size small, about the size of *agilis* Gravenhorst . . . 18. **ridens** sp. n.

Elytra unicolorous black, sometimes a little brownish, or with the suture or apical margins obscurely narrowly reddish 9

9. Size very small, 4 mm.; elytra often with the apical margins very narrowly and obscurely reddish . . . . . 19. **minutus** Boheman

Size larger, at least 7 mm. 10

10. Antennae very stout in broadest aspect; head transverse, posterior angles rectangular but rounded; sides behind eyes parallel; pronotum often parallel-sided; size at least as large as *longicornis*; elytra often with suture narrowly reddish . . . 9. **sanamus** nom. nov. (= *nitidicollis* Klug)

Antennae normal, head not or only slightly transverse; hind angles not marked; pronotum usually narrowed in front 11

11. Anterior coxae black; size of *longicornis*; elytra more closely punctured than in that species, more rugose, and a little shorter 8. **incognitus** Bernhauer

Anterior coxae in part at least yellow or brown, of, if black, the species much smaller than *longicornis* 12

12. Aedeagus with the median lobe narrowed to apex where it is bluntly pointed; puncturation of elytra fine and rather sparse; pronotum long and strongly narrowed in front; head narrow, usually ovate,

narrowed behind eyes; basal segment of antennae and femora brown or yellow-brown . . . . . 13. **peregrinus** Fauvel

Aedeagus with the median lobe rounded at apex, very like that of *longicornis* 13

13. Size larger, as large as *longicornis* 14

Size smaller, as small as *agilis* 16

14. Antennal segments distinctly longer than broad in both aspects . . 15

Antennal segments slightly transverse or scarcely longer than broad in broadest aspect . . . . . 11. **igacus** sp. n.

15. Head transverse, less rounded; antennae stouter; abdomen more strongly punctured than in *longicornis*, elytra broader in proportion to their length, more strongly punctured . . . . 12. **labdanus** sp. n.

Head less transverse, more rounded; antennae more slender; abdomen more finely punctured; elytra longer and more finely punctured . . . . . 10. **maskinius** sp. n.

16. Antennae black, or with base only brown, penultimate segments not or scarcely longer than broad; puncturation of elytra fine and close, much closer than in *peregrinus* . . . 14. **ponderosus** sp. n.

Antennae with the penultimate segments longer than broad . . . 17

17. Puncturation of abdomen extremely close and extremely fine, uniform throughout (comparable with that of *micans* Gravenhorst) 17. **tachyoryctides** Jeannel & Paulian

Puncturation of abdomen less close and less fine, comparable with that of *longicornis* or *peregrinus* 18

18. Antennae brownish-black; scutellum rather strongly punctured, somewhat similar to the elytra; head transverse, parallel-sided behind eyes; elytra transverse, dull, more closely and asperately punctured; aedeagus a little narrowed at apex, intermediate between that of *peregrinus* and the typical rounded form of the subgenus 15. **limulus** sp. n.

Antennae black; scutellum distinctly less strongly punctured than the elytra; head narrowed behind eyes, not transverse; elytra a little longer than broad, shining, more finely, not asperately punctured; aedeagus of the typical form, but with the median lobe slightly constricted about the level of the apex of the paramere 16. **bishanus** sp. n.

1. *Philonthus ugandae* Bernhauer.

Bernhauer, 1937, *Ann. Mag. nat. Hist.* (10) **20** : 302.

This species, of which the type is in the British Museum, is easily recognised by the reddish patch at the external apical angle of each elytron and by the very light coloured femora which have a well defined narrow black lower margin. In antennal structure it is very like *longicornis* Stephens.

There are two specimens from N. W. Rhodesia in the British Museum which were standing over the name *maculatus* Bernhauer, which are evidently the same species and there were another four from the same locality over the name *rubromaculatus* Bernhauer. One of the latter bears a label " maculatus Bernh., Type". Not only is *maculatus* Bernhauer an unpublished name, but also it is preoccupied by *maculatus* Cameron, 1920, from India.

Bernhauer in 1915 (1914, *Münch. koleopt. Z.* **4** : 9) described a variety of *longicornis* Stephens from Italy under the name var. *rubromaculatus*. In 1923

(*Ent. Bl.* **19** : 177), referring to a specimen of this variety from South Italy he said " Kenntlich am breit rotgelb gefärbten Hinterrand der Flügeldecken". In neither case did he refer to the marked difference in colour of the femora as seen in his types of *ugandae* and *maculatus* from Africa, and there can be no doubt that his variety *rubromaculatus* is, as he described it, merely a colour variation or aberration of the European *longicornis* Stephens. Jarrige (1947, *Ann. Soc. ent. Fr.* **116** : 70) proposed the new name *coprophilus* for the *P. rubromaculatus* Bernhauer, since the latter name was preoccupied by *rubromaculatus* Blanchard, 1843. He definitely stated that his *coprophilus* was a new name for the Bernhauer *rubromaculatus* and cited the original reference, therefore *coprophilus* Jarrige must be taken as synonymous with the European variety of *longicornis* Stephens and cannot apply to the African species. Since the African species is identical with *ugandae* Bernhauer no new name is required.

2. *Philonthus bestialis* Bernhauer.

Bernhauer, 1939, *Mém. Mus. nat. Hist. nat., Paris* (N.S.) **9** : 86.

In the British Museum there are two paratypes of this species, which was described as a variety of *longicornis* Stephens. It is undoubtedly a good species if the paratypes are the same as the type. It may be known by the dark legs and by the large red patch on the apical half of each elytron, which patches are somewhat variable in size but extensive.

There were also specimens of the same species from KENYA (Naivasha and Londiani) standing in the collection amongst the *P. bisignatus* Boheman. There is also a specimen from British East Africa (L. Elmenteita) bearing the label " parcipennis Bernh. var ? " This specimen has more shining elytra than the specimens of *bestialis*, due, I believe, to the fact that the elytra are exceptionally clean and denuded of pubescence. I think it is also a specimen of *bestialis*. I possess a very long series of this species from KENYA : Muguga[1], viii–ix. 1953 (*V. F. Eastop*), where it appears to be a very common species, especially in dung. In his description of *bestialis* Bernhauer says it differs from *longicornis* by the slight bluish " schimmer " of the head, pronotum and elytra. In neither of the paratypes or the other specimens can I see any trace of this.

Of the species with red on the elytra *bestialis* and *ugandae* are the two which in size are at least as large as *longicornis*, the others being considerably smaller.

3. *Philonthus bisignatus* Boheman.

Boheman, 1848, *Ins. Caffr.* **1** : 282.

I have not seen the type of this species, and since Boheman does not give a description of the antennal segments it is difficult to be sure whether his description refers to the present species or to *delusor* sp. n. or *deleterius* sp. n. He gives the length as 6 mm., which is a little less than either of these three, but he also says " magnitudo . . . *P. bipustulati* " which is a little larger. The named series in the British Museum is not much help since it consisted of a number of of the present species, the species which I am describing below under the name

[1] The Muguga mentioned here and elsewhere in this paper is the place near Kikuyu.

delusor, several *bestialis*, a species of the *maritimus* group and a specimen of *peliomerus* Kraatz. I am using the name for the present species because it agrees with the description better, i.e. in the sense that the antennae of the other two species agree less with the " statura bipustulati " of the author, because it appears to be the species usually recognised as *bisignatus*, and because I have seen specimens from the region from which it was described (Natal). The other two new species I have only seen from Abyssinia and Kenya respectively.

The species bears a considerable resemblance to *P. peregrinus* Fauvel except in colour, and may be distinguished from that species by the reddish patch at the apical external angle of each elytron. From the two following new species, which also have this patch, it may be known by the stouter antennae with less elongate penultimate segments and by the smaller elytral patches, which are usually somewhat lighter.

Bernhauer (1915, *Ann. Hist.-nat. Mus. Hung.* **13** : 140) described a new variety of *peregrinus* Fauvel under the name var. *pustulatus* ; this, in Junk, *Col. Cat.* pars 129, has been placed as a synonym of *bisignatus*. In this Catalogue there is also given a var. *piceicoxis* Eppelsheim. This was described as a distinct species ; it was listed as a variety of *peregrinus* Fauvel in Junk, *Col. Cat.* pars 57 and then transferred to a variety of *bisignatus* in the supplement. The species was described as black and as distinct by the unicolorous antennae and anterior coxae. I have seen no specimens which agree with this description and I think it very unlikely that it will prove to be a variety of *bisignatus*. It is described on a single female, and unless other specimens are known which agree with the type it is impossible to tell whether it is really a variety of either of these species or even whether it belongs to the group at all.

P. bisignatus Boheman appears to be fairly widespread over south-east Africa. I have seen specimens ranging from Cape Colony to Nyassa. There was also a specimen in the British Museum over the unpublished name " latus Bernhauer " which is apparently *bisignatus* Boheman : this specimen bears the data label " Gambia."

4. **Philonthus delusor** sp. n.

This species is very closely allied to *P. bisignatus* Boheman and mixed with it in collections. The examples of *bisignatus* recorded from Abyssinia by Bernhauer (1931, *J. Linn. Soc.*, (*Zool.*) *Lond.* **37** : 587) should be referred to the present species.

P. delusor may be easily recognised by its more slender antennae, which have all the segments very much longer than broad, whereas in *bisignatus* the penultimate segments are scarcely longer than broad. In this respect *delusor* resembles the following species. Antennae brownish-black, the basal segment being sometimes (? usually) lighter. Red apical patches on elytra more extensive than in *bisignatus* and reaching beyond middle of elytra. Pronotum broader at base and with a more rotund appearance than in that species. Aedeagus (only one examined) very like that of *bisignatus*, but with the median lobe dilated about the level of the apex of the paramere and therefore less parallel-sided than in *bisignatus* and paramere also more slender about the middle. These distinctions in the aedeagus are very slight but may prove to be valid. Finally the pronotum has a very fine but distinct ground sculpture whereas *bisignatus* has none except under a very high magnification. In size, general appearance and sculpture the two species are similar.

Holotype ♂, ABYSSINIA : Djem-Djem Forest, ix. 1926 (*J. Omer-Cooper*). Paratypes 3 ♀, same data, British Museum (Nat. Hist.).

5. **Philonthus deleterius** sp. n.

This species, like the previous one, differs from *bisignatus* Boheman in the structure of the antennae, which are more slender and have all the segments much longer than broad. It resembles *bisignatus* in the form of the pronotum and *delusor* sp. n. in the more extensive red patches on the elytra. It may be distinguished from *delusor* by the colour of the legs and antennae.

Antennae entirely black, not lighter on the basal segment ; legs also darker, being entirely black, or, at the most, feebly brownish on femora and tarsi, whereas in *delusor* femora are distinctly brown or yellow-brown. Puncturation of elytra finer than in *bisignatus*. Median lobe of aedeagus very like that of that species but paramere much longer and more slender (see p. 161, fig. 6).

Holotype ♂, KENYA : Muguga, i. 1953 (*V. F. Eastop*). In author's collection.

Paratypes, same locality, various dates 1953 in British Museum (Nat. Hist.), Musée Royal du Congo Belge, coll. H. Last and author's collection.

This species would appear to be very common in the district where it occurs.

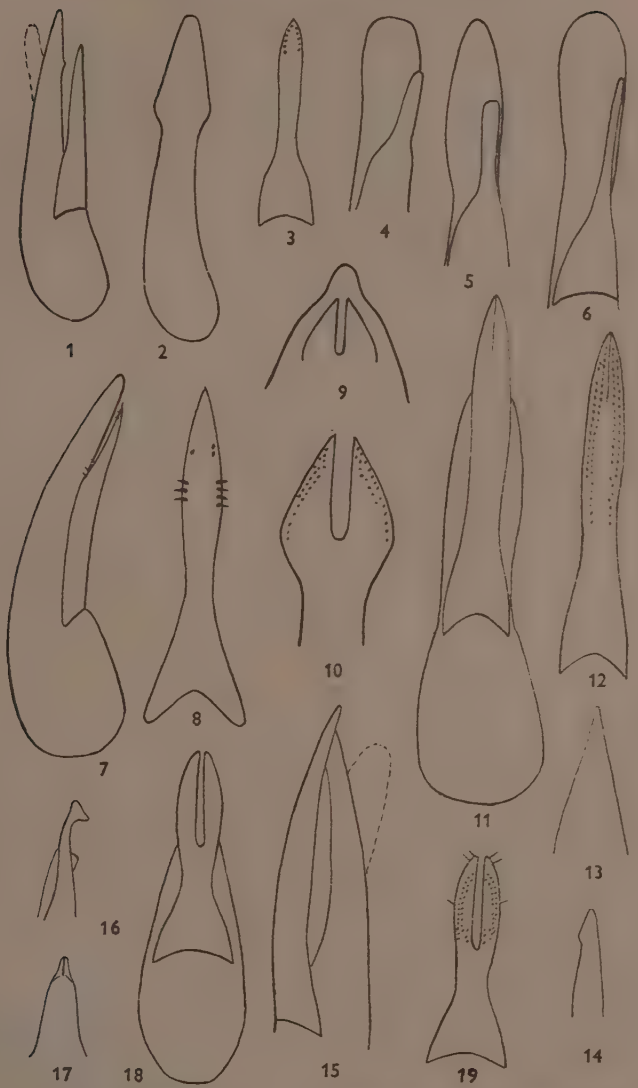
6. *Philonthus kasaiensis* Bernhauer.

Bernhauer, 1928, *Wien. ent. Ztg.* **45** : 109.

I have included this species in the subgenus on the strength of a single specimen from UGANDA : Budongo Forest, 7. ii. 1935 (*F. W. Edwards*) which is in the British Museum and has been so determined by Bernhauer himself.

Aedeagus of same form as that of *peregrinus* Fauvel and differing but little from it ; median lobe not extending quite so far beyond apex of paramere and paramere slightly widened and rounded at apex, less acuminate and less narrow than in *peregrinus* (p. 161, fig. 5). Sculpture of elytra closer and deeper and abdomen more sparsely punctured. Antennae long, with all segments much longer than broad. Elytra reddish-yellow with suture narrowly black, a character which will serve to distinguish the species from all except *vestigator* Tottenham. The latter species, judging from the single type, is smaller and has the elytra a deeper red, with broader dark suture and dark basal margin with puncturation very much finer and closer and with shorter antennae with shorter segments ; in addition *vestigator* has a broadly rounded median lobe.

I believe there will prove to be another species in the African fauna which will be closely allied to this species but distinct by the rounded median lobe ; at present I have seen only a few females which do not quite agree with either *kasaiensis* or *vestigator* and a few males which are damaged or in too dirty a condition for identification. Only an examination of the type specimen can prove whether the specimen so named, upon which I have based the above remarks, is the true *kasaiensis* Bernhauer or not. It must be noted that Bernhauer, in his original description, says of the antennae " die vorletzten Glieder nicht quer." This is true of the specimen here described but is rather an understatement.



FIGS. 1–19.—(1)–(3) *P. limbukus* sp. n.: (1) Aedeagus, lateral view; (2) median lobe, upper view; (3) paramere. (4) *P. vestigator* sp. n., apical part of upper view of aedeagus. (5) *P. kasaiensis* Bernhauer, ditto. (6) *P. deleterius* sp. n., ditto. (7)–(8) *P. pellax* sp. n.: (7) Aedeagus, lateral view; (8) paramere. (9)–(10) *P. aminius* sp. n.: (9) Apex of aedeagus, upper view; (10) apex of paramere. (11)–(15) *P. tabius* sp. n.: (11) Aedeagus, upper view; (12) paramere, (13) apex of median lobe, upper view; (14) ditto, lateral view; (15) apex of aedeagus, lateral view. (16)–(19) *P. reinecki* Schubert: (16) Apex of median lobe, lateral view; (17) ditto, upper view; (18) aedeagus, upper view; (19) paramere.

7. **Philonthus vestigator** sp. n.

Easily recognised by its very small size and by the fact that the elytra are entirely red except for the suture and extreme base, which are narrowly black. In structure similar to *bisignatus* Boheman, differing in the following respects: the size is smaller, 5 mm. (i.e. about the size of *minutus* Boheman); the puncturation of the elytra is a little finer and closer. It also closely resembles a specimen of *kasaiensis* Bernhauer in the British Museum, from which, however, it differs in the distinctly finer puncturation of the elytra. (Aedeagus, p. 161, fig. 4.)

Holotype ♂, KENYA: Ngonga Hills, 16.vi.1953 (*V. F. Eastop*). Unique. In author's collection.

Note.—It is possible that this insect is the same as that which Eppelsheim (1895, *Dtsch. ent. Z.* **39**: 127) described from Gaboon as *varians* Paykull var. *scutatus*. Without seeing Eppelsheim's type it is impossible to tell the identity of his insect. Although it was described as a variety of *varians*, the name has been transferred in Junk, *Col. Cat.* pars 57, to a variety of *peregrinus* Fauvel. There are specimens also in the British Museum named by Bernhauer as *bisignatus* var. *scutatus* Epp. This series, however, consists of four distinct species. Of these only three specimens could possibly be Eppelsheim's species and they come from Abyssinia and Arabia. They are all in a poor condition and could not be assigned with certainty to any species. Whatever Eppelsheim's insect may prove to be, it does not affect the present species, for *scutatus* cannot be used as a specific name, being preoccupied by *scutatus* Erichson.

8. *Philonthus incognitus* Bernhauer.

Bernhauer, 1931, *J. Linn. Soc. Lond.* (*Zool.*) **38**: 585.

This insect was described as a distinct species by Bernhauer, although he expressed the opinion that with the advent of more material it might prove to be a race of *longicornis*. In my opinion he was correct in describing it as a good species. He remarks that it only differs essentially from *longicornis* "in its shorter elytra, which are more finely and closely punctured and in its unicolorous deep black coxae and legs". This agrees with the type specimen in the British Museum. It must be noted, however, that some of the specimens to which he refers show some brown on the anterior coxae and one specimen (from Wachacha Ravine) is distinctly smaller than the others and has all the femora brown and also a narrower head. This specimen is a female and I think it doubtful whether it belongs to the same species. Taken on the whole *incognitus* is a much deeper black colour than *longicornis*, the first antennal segment being black, as Bernhauer points out. This character, together with the closer puncturation of the elytra which are consequently less shining and which are also shorter in proportion to their width, will serve to distinguish the species from *longicornis*. I believe, from the few specimens examined, that there will prove to be slight differences in the form of the head, but these differences may be average differences and only in some cases of any use for the determination of the species. The aedeagus is extremely like that of *longicornis*, but possibly a little longer.

9. **Philonthus sanamus** nom. nov.

P. nitidicollis Klug, 1855, *Ber. Berl. Acad.* : 644 nec Lacordaire, 1835.

This species was described by Klug on a single female. The name, however, is preoccupied by *nitidicollis* Lacordaire, 1835, and I propose for it the new name **sanamus**. Dr. Delkeskamp has kindly sent me Klug's type for examination, and having seen it I am not convinced as to the identity of many specimens so named. The type specimen has a very noticeable yellow sheen on the pronotum, of the same nature as that of *irinus* Horn. Most of the specimens I have seen lack this sheen, and since I have once observed a similar thing in a specimen of *P. tenuicornis* Mulsant and Rey, I think, in the case of the present species, it is not a specific character. The head is of similar form to that of *ebeninus* Gravenhorst, the antennae have the segments transverse in one aspect, scarcely appreciably serrate ; their structure, however, is very difficult to see as they are very twisted. The pronotum is distinctly narrowed in front. Many specimens, which I believe to be the same species, have the antennae appreciably serrate, but not strongly, and the pronotum not narrowed in front ; in fact as far as head and pronotum are concerned they very closely resemble *ebeninus*. The elytra in the type are black, whereas in the majority of other specimens the suture is clearly reddish.

Whereas I have seen certain specimens which, on comparison with the type, one would put down without hesitation as a different species, yet I have also seen others which form a chain of intermediates. If I am correct in assuming that all these specimens belong to one species, that species is extremely variable as regards the form of the pronotum and also in size. The species may be known by its very transverse head, by the stout antennae, with the middle and penultimate segments transverse, often somewhat serrate in appearance, by the pronotum often being parallel-sided, by the elytra being usually distinctly narrowly reddish at the suture. The elytra are more closely punctured than in *longicornis* and the abdomen is also more strongly punctured than in that species.

I have seen a number of specimens which I believe to be this species, in the British Museum, coll. H. Last and my own collection from Cape Province, Natal, Transvaal, and Rhodesia. One of the specimens in Mr. Last's collection approaches the type more than any other that I have seen.

For the form with the parallel-sided pronotum and reddish suture I propose the name *forma* **placatus.**

[*Philonthus longicornis* Stephens]

Stephens, 1832, *Ill. Brit. Ent. Mand.* **5** : 237.

This species is listed as being cosmopolitan and there are many records of it from the African continent. I believe that most of the records will prove to be erroneous and refer to one of the three following species. There can be no doubt that the species is very widespread and its presence in Africa would not be surprising. The specimens recorded by Bernhauer from Abyssinia (1931, *J. Linn. Soc.* (*Zool.*) **37** : 587) refer to three other species ; the record from Serpent Lake refers to *P. incognitus* Bernh., that from Mt. Zukwala to *maskinius* sp. n. and that from Kattere River to a species apparently belonging to the *ventralis*-group or near.

All the African specimens which I have seen differ from the British *longicornis*, some in sculpture, some in antennal structure, some in slight differences in the aedeagus, and mostly in having a more convex pronotum.

10. **Philonthus maskinius** sp. n.

Extremely like *P. longicornis* Stephens and difficult to distinguish from it, but apparently a distinct species. It only differs in the following respects:

Elytra more closely punctured, having a more asperate appearance and distinctly duller; head less parallel-sided immediately behind the eyes; aedeagus longer and with a longer paramere with its apex more acuminate and with more pegs, which are arranged in the form of an inverted V, about 5 on each arm, and forming less of a cluster than in *longicornis*. Length about 10 mm.

Holotype ♂, Abyssinia: Mt. Chillalo, 17.xi.1926, *circa* 10,000 ft. (*H. Scott*). Paratypes, Mt. Zuquala, 21–23.x.1926 (*H. Scott*); Djem Djem Forest, ix.1926, 27–29.ix.1926 (*J. Omer-Cooper*). All in British Museum (Nat. Hist.).

Bernhauer (1931, *J. Linn. Soc. Lond. (Zool.)* **37**: 587 (note)) records a form of *longicornis* Stephens under the name subsp. *kristenseni* from Abyssinia. This is said to have the elytra more diffusely punctured than *longicornis*, otherwise it might well be the present species. This name could not be used as a specific name, being preoccupied by *kristenseni* Bernhauer, 1915.

11. **Philonthus igacus** sp. n.

Very close to *longicornis* Stephens and only differing in the following characters:

Antennae shorter with the segments less elongate; head rounder; pronotum more convex; elytra more closely punctured and more transverse; pronotum less narrowed in front than is usually the case in *longicornis*. Legs appear uniformly dark, with femora brown, only slightly infuscate on lower margin and with apex of tarsi brownish, but the legs of *longicornis* are variable in colour and therefore this will not serve always as a distinguishing feature. Length 10–11 mm.

Holotype ♂, Cape Colony: Uitenhage (*J. O'Neill*). Paratypes, same data, 3; Natal: Frere (Marshall coll.) 3 ♀; Umtata, Transkei, 18.ii–18.iii.1923 (*R. E. Turner*). All in British Museum (Nat. Hist.).

I have seen a large number of specimens of this species in Coll. H. Last from various localities in S. Africa; it is probably the species which mostly does duty for *longicornis* in collections.

12. **Philonthus labdanus** sp. n.

Very like *P. longicornis* and the two preceding species, differing in the following respects:

Head more transverse than in either of the three species; pronotum distinctly more convex than in *longicornis* and sometimes broader, less narrowed anteriorly; elytra shorter or, at any rate, more transverse, and their puncturation much stronger and more sparing than in the two preceding species; they are also more shining than in these two; scutellum very broad at the base and large; puncturation of the abdomen a little stronger. The longer antennal segments will separate the species from *igacus*; the segments are longer than broad in both aspects, but stouter than in *incognitus* Bernhauer. The whole insect

appears to be more coarsely pubescent than is usually the case amongst the species of the group.

Holotype, ANGOLA (without more precise date). In British Museum (Nat. Hist.). There are also in the same collection some specimens from Pretoria which I believe to be the same species, but they are not in a good enough condition to be sure; a female from Uganda also, I believe, is the present species.

13. *Philonthus peregrinus* Fauvel.

Fauvel, 1866, *Ann. Soc. ent. Fr.* (4) 6 : 315.

A number of different species appear to be confused under this name and an examination of the type would be necessary in order to be absolutely sure of the identity of the species. That species which I here regard as *peregrinus* Fauvel is the one which appears to be most generally recognised as *peregrinus* and is very distinct and easily recognised. It must be noted, however, since the present species is so distinct from *longicornis* and its allies, that Fauvel himself at one time placed *peregrinus* in synonymy with *longicornis*.

P. peregrinus differs from all the other black species of the subgenus at present known to me in the form of the apex of the median lobe, which instead of being broadly rounded is narrowed to a blunt point (see Tottenham, 1949, *loc. cit.* : 346, fig. 127). Apart from this the species may be known by its size, which is distinctly smaller than *longicornis* (although in this respect it resembles the three following species), by the sparse puncturation of the elytra which is a distinctive character, by the brown or yellowish-brown femora, by the brown anterior coxae, by the rest of the legs being somewhat brownish, by the pale basal segment of the antennae and by the small ovate head which is usually narrowed behind the eyes, and by the long pronotum which is very strongly narrowed in front.

The species appears to be very widely distributed in Africa; I have also seen specimens from the Seychelles and it is recorded from India.

14. **Philonthus ponderosus** sp. n.

This species has been confused with *peregrinus* but is easily distinguished by the aedeagus of the male, which has the median lobe rounded at the apex as in most other species of the group; the median lobe is, however, a little more symmetrical than in *longicornis*. Apart from the genitalia, the species may be distinguished from *peregrinus* by the puncturation of the elytra which is very much closer; only possibly at the extreme shoulders is the puncturation at all comparable with that of *peregrinus*. The head is a little variable in both species, but it would appear that in *ponderosus* it is on the average broader, less ovate, less distinctly narrowed behind the eyes. Pronotum shorter in proportion to its width and more convex. In the few specimens seen the legs are darker than is usually the case in *peregrinus*. In other respects the species are similar.

Holotype ♂, NATAL: Frere (*Marshall*). Paratypes, same data, 1 ♂, 1 ♀, in British Museum (Nat. Hist.). RHODESIA: Mashonaland, Salisbury (*Marshall*), 1 ♂, 1 ♀, in British Museum (Nat. Hist.) and author's collection. One of the Rhodesia specimens, a male, has the head parallel-sided behind the eyes and the

other, a female, has the elytra dark reddish-brown (? immature) and the pronotum much less narrowed in front. I have not called these two specimens paratypes, since it is possible that they may eventually prove to be one or two other species. I have also seen several specimens in Coll. H. Last from Natal and Transvaal.

From the two following species, *ponderosus* may be known by the much shorter segments of the antennae.

15. **Philonthus limulus** sp. n.

This species so closely resembles the previous one as to require no separate description. It differs in the following characters :

Basal segments of antennae much darker, being nearly black ; head differently shaped, being a little longer than broad, with eyes a little longer and extending more on to the surface of the head, sides behind the eyes very feebly rounded and slightly convergent behind, with the hind angles a little marked ; pronotum appears to be a little longer ; scutellum much more strongly punctured, somewhat similarly to the elytra ; abdomen more sparingly and more strongly punctured, distinctly more strongly than in *peregrinus*. Length *circa* 8 mm.

Aedeagus has the median lobe much narrower at the apex than is usually the case and in this respect it is intermediate between *peregrinus* and the other species of the group.

Holotype ♂, Transvaal : Pretoria, 6.viii.1917. In British Museum (Nat. Hist.).

16. **Philonthus bishanus** sp. n.

This species is very closely related to *P. agilis* Gravenhorst and only differs in the following respects :

Antennae a little shorter, the segments being a little less elongate, not very, but perceptibly, longer than broad or broader than long according to the aspect from which they are viewed ; head more circular, rounded behind the eyes, more like that of *P. jurgans* Tottenham ; elytra more shining with the sculpture a little weaker and less close ; aedeagus has the portion of the median lobe beyond the apex of the paramere longer than in *agilis*.

Holotype ♂, Transvaal : Johannesburg, 31.x.1949. In coll. H. Last. Paratypes, Johannesburg, 1.xii.1950, ♀ ; 22.xi.1950, ♂ ; Malvern, 20.xi.1950, ♂, in coll. Last ; Nquito, 21.ii.1950, ♂, in author's collection ; Natal, 28.v.1944 ♀, in coll. H. Last.

17. *Philonthus tachyoryctides* Jeannel & Paulian.

Jeannel & Paulian, 1945, *Mém. Mus. nat. Hist. nat., Paris* (n.s.) **19** : 83.

I have examined four paratypes of this species in the British Museum collection. The species is easily distinguished from the other small black species of the subgenus by its slender antennae with elongate segments and by the very close, fine, uniform puncturation of the abdomen, which is much more of the nature of that seen in *micans* Gravenhorst than is the case with the other species, in which it is more of the nature of that seen in *longicornis* or *agilis*. The aedeagus has the median lobe much more symmetrical than in *longicornis*.

In the three males examined the paramere has a distinct shoulder as in *longicornis* and is not as straight as figured by the authors.

18. **Philonthus ridens** sp. n.

In size and general appearance very like the three preceding species but easily distinguished from them and from all other species of the subgenus by its colour.

Black, with the apical margin of the elytra very narrowly but definedly reddish-yellow; antennae and legs also black, with the tarsi, femora and basal part of the tibiae somewhat brown.

In size the species is slightly larger than a large *agilis* Gravenhorst and broader in build; it may well be compared with that species. The antennae are similarly constructed; the head is of much the same shape but larger; the pronotum is broader and a little longer in proportion to its width; the elytra are shorter in proportion to their length, with puncturation as close as in *agilis* but slightly stronger; the abdomen is distinctly more strongly punctured. The aedeagus is of the typical form, but differs from that of *agilis* in having the median lobe extending further beyond the apex of the paramere, and in the more spoon-shaped, less circular apex of the median lobe.

Holotype ♂, S. Rhodesia: Umtali, 13.v.1952 (*Fr. E. J. Pearce*); in the author's collection. Paratypes same data, 2, in coll. H. Last; N.W. Rhodesia: Kashitu, 24.iii.1912, 26.iii.1925 (*H. C. Dollman*); 2 ♀, in British Museum. Transvaal: Irene, 28.iv.1952, coll. H. Last.

19. *Philonthus minutus* Boheman.

Boheman, 1848, *Ins. Caffr.* **1**: 279.

The species which I take to be *minutus* Boheman is on the authority of specimens so named by Bernhauer; but since I possess a series of quite another species also named *minutus* Boheman by the same authority, it is with some hesitation that I use the name. Boheman described his species from Natal. There is some inconsistency in his description for he said the length is 4 mm. but that the species was the size of *albipes*; the insect in question is distinctly smaller than *albipes* and measures 5–7 mm. as against *albipes* 7–8·5 mm. The antennae are rather short, with the penultimate segments only just longer than broad in one aspect, feebly transverse in another; the head is a little variable, more or less circular or long oval, rather rounded behind the eyes; the pronotum is distinctly, but not strongly, narrowed in front; the puncturation of the elytra is fine, rather shallow, more distinct than in *bisignatus*, closer than in *peregrinus*; the puncturation of the abdomen is close and fine. The elytra show a tendency to be pitchy or reddish-brown, sometimes obscurely lighter at apical margin; the antennae are black with the basal segment more or less brown; the femora are brown or yellow-brown, infuscate on basal margin, tarsi feebly brown. The aedeagus was figured by Tottenham, 1949, *loc. cit.*: 346, fig. 125.

The species is quite distinct from all the other dark species included in this paper by its very much smaller size.

PART III.

Some New or Little-known African Species.

20. *Philonthus reinecki* Schubert.

Schubert, 1902, *Dtsch. ent. Z.* **1902** : 405.

The median lobe of this species is shorter than the paramere ; its apex, upper view, is rather broad, and briefly narrowed to a blunt point ; there is a short keel down the centre of this narrowed portion on the inner face ; viewed laterally the apex is hooked and there is a central tubercle some distance below the hook. The paramere is furcate, the two branches close together, their inner margins more or less parallel, their outer margins evenly rounded ; each branch of the fork has a double row of rather irregular pegs extending almost the whole length of the fork, starting from the inner margin a short distance from the apex, and gradually curving outwards so that basally the rows are near the outer margins and distant from the inner (figs. 16–20).

21. **Philonthus limbukus** sp. n.

In general appearance very like species of the *agilis-peregrinus*-group, but easily recognised by the discal series of the pronotum being 4-punctate.

Entirely black except for the extreme base of the second antennal segment and for the mandibles, which are pale reddish-brown.

Head in male, transverse, with eyes rather flat, the sides behind eyes (measured to the bristle) about as long as the eyes, almost straight, very feebly convergent, posterior angles abruptly obtusely rounded at the bristle. In the female the head is much narrower, longer than broad, with the eyes slightly smaller and the sides behind slightly longer and more parallel. The inter-ocular punctures are widely distant, as far apart as the antennal bases ; the anterior ocular puncture is touching or nearly touching the margin of the eye ; two other punctures at the hind margin of the eye ; a pair of punctures at the neck a little further apart than the length of the eye ; another pair just in front of these and a little lateral to them ; on each side between the latter pair and the hindermost marginal puncture of the eye is another rather strong puncture ; ground sculpture fine, close, more or less transverse.

Antennae with the second segment equal to the third, fourth to tenth segments decreasing in length and scarcely increasing in width, the fourth distinctly longer than broad, the tenth only just longer than broad ; the eighth to tenth in their widest aspect are a little transverse; eleventh rather short, on its longest sides about one and a half times as long as the tenth.

Pronotum of the typical form of the *agilis*-group, a little variable ; as long as broad ; sides strongly convergent anteriorly, very feebly convex ; posterior angles obtusely rounded; base strongly rounded ; discal series each consisting of four more or less equidistant moderate punctures ; usual lateral punctures ; ground sculpture as on the head.

Scutellum rather finely and not very closely punctured.

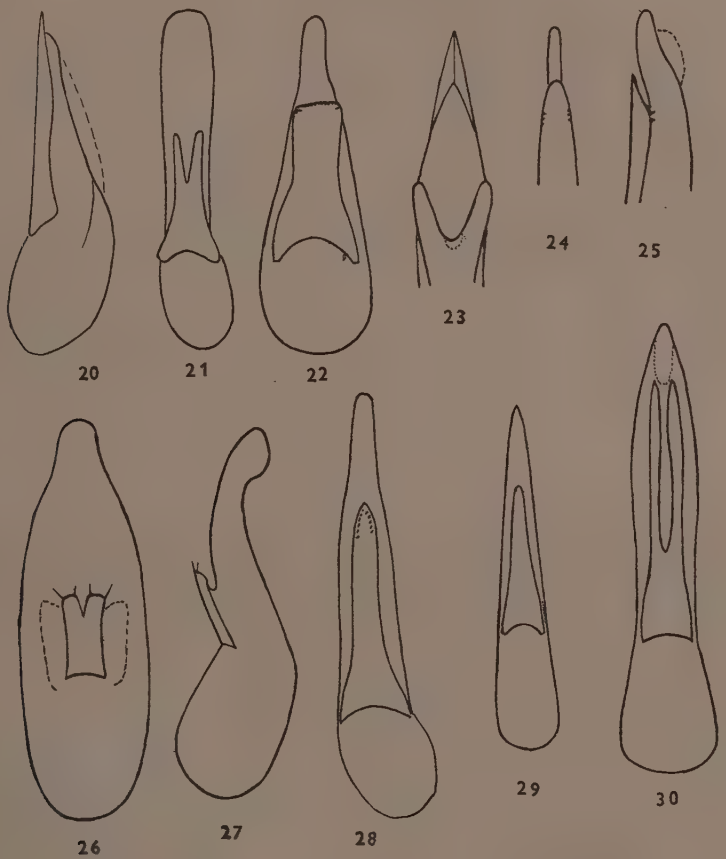
Elytra together a little broader than long (24 : 20), as long as the pronotum ; slightly duller than the rest of the body ; puncturation moderate and close, very similar to that of *agilis* Gravenhorst.

Abdomen very finely punctured, more closely at the bases of the segments, very sparingly at the apices. The puncturation is about as fine as that of *peregrinus* Fauvel but more sparing.

Posterior tarsi with the first segment fully as long as fifth, longer than second and third together.

Length : 8 mm.

Male.—Anterior tarsi simple, not dilated ; sternite 8 triangularly emarginate in middle of apical margin ; aedeagus (viewed from above) with median lobe distinctly widened before the level of apex of paramere, narrowed to a very blunt rounded point at apex ; paramere long, slender, parallel-sided, bluntly pointed at apex, where there are two marginal rows of about six pegs each (figs. 1–3).



Figs. 20–30.—(20) *P. reinecki*, aedeagus, lateral view. (21) *P. jacksoni* Cameron, aedeagus, upper view. (22) *P. nairobianus* Cameron, aedeagus, upper view. (23) *P. densicauda* Bernhauer, apex of aedeagus, upper view. (24)–(25) *P. subaeneicollis* Bernhauer ; (24) apex of aedeagus, upper view ; (25) ditto, lateral view. (26)–(27) *P. tumulinus* sp. n. : (26) Aedeagus, upper view ; (27) aedeagus, lateral view. (28) *P. iridescens* Tottenham, aedeagus, upper view (pegs on inner face of paramere shown). (29) *P. porus* sp. n., aedeagus, upper view. (30) *P. lasti* sp. n., aedeagus, upper view.

Holotype ♂, KENYA: Muguga, viii–ix. 1953 (*V. F. Eastop*). Paratypes, 2 ♂ and 12 ♀, same data. In author's collection. The author has received numerous examples from this locality taken by the same collector during the last year.

The difference in the shape of the head of the two sexes is sufficiently great to make it appear that there are two distinct species, but the form seems constant for the two sexes and there are no other appreciable differences: I feel convinced that it is only a sexual difference.

The species can easily be distinguished from *csikii* Bernhauer, judging by specimens so named in the British Museum, by the much more narrowed pronotum and much closer puncturation of the elytra and abdomen and much smaller size. From *P. parciventris* Bernhauer, which it most closely resembles, it may be known by the generally smaller size, darker legs, more closely but equally finely punctured abdomen and by the less sharply pointed, somewhat spoon-shaped apex of the median lobe of the aedeagus.

22. **Philonthus pellax** sp. n.

In colour very like *P. cruentatus* Gmelin, but easily distinguished from that species by the 4-punctate discal series of the pronotum. The red patch on each elytron is more extensive than is usually the case in *cruentatus* and the puncturation of the abdomen is less close. Amongst the African species it comes close to *praetor* Tottenham, from which it may easily be distinguished by its dark legs and by the fact that the elytra are black with a longitudinal red patch on each instead of being reddish with the scutellary and sutural region black and with an abbreviated black patch near the sides; also the abdomen is very much more punctate. From *vittiger* Fauvel and *rubrovittatus* Tottenham it can also be distinguished by the red elytral patches not being oblique.

Black; each elytron with a longitudinal red patch which is usually clearly defined and has its outer edge parallel with the suture and the inner edge parallel with the suture posteriorly and parallel with the side of the scutellum anteriorly; the width of the patch is about half the width of the elytron, but the patch is situated much nearer to the suture than to the lateral margin; antennae, mouth parts and legs black, the latter sometimes with the femora a little brownish and with the tarsi also slightly brownish, the last segment often distinctly lighter; abdomen strongly iridescent.

Head round, varying slightly in shape from a little broader than long (male) to about as long as broad (female); eyes flat; sides behind eyes (measured to bristle) about two-thirds the length of the eyes, the bristle being midway between the hind margin of the eye and the neck; posterior angles very obtusely rounded; inter-ocular punctures widely distant from one another, nearly as far apart as the antennal bases, fully three times as distant from one another as from the anterior marginal puncture of the eye; the second marginal puncture of the eye is nearly in a straight line with two other punctures placed between the eye and the mid-point of the hind margin of the head; behind the third of these is another puncture on each side, touching the neck and a little nearer to the middle of the hind margin; very few other small indistinct punctures in the post-ocular region; ground sculpture very fine and weak, only visible under a strong magnification.

Antennae with second segment distinctly shorter than first, third distinctly longer than second, but shorter than first, segments 4–10 scarcely differing in width, fourth distinctly longer than broad, the remainder decreasing in length, tenth being only just

longer than broad (in one aspect slightly transverse), eleventh short, on its longest side shorter than ninth and tenth together.

Pronotum about as long as broad ; front margin about as wide as head, slightly convex ; anterior angles depressed, obtuse ; sides nearly straight, distinctly divergent posteriorly so that the pronotum is widest at the posterior angles which are not marked but strongly rounded ; ground sculpture as on the head ; discal series each consisting of four moderate punctures, of which the third and fourth are closer together than the others.

Scutellum punctured similarly to the elytra.

Elytra with the puncturation moderately close and fine, very like that of *P. longicornis* Stephens, but just a little stronger and sparser.

Abdomen almost smooth, very shining, with very fine punctures which are rather sparse on the basal segments and become extremely sparse on the apical segments where they are situated mostly on the apical half of each segment.

Legs with all the tibiae spinose and pubescent ; posterior tarsi nearly as long as the tibiae, with the first segment as long as the fifth and as long as the second and third together.

Male.—Anterior tarsi moderately dilated ; sternite of eighth segment narrowly triangularly excised on its apical margin ; aedeagus somewhat like that of *praetor* Tottenham, but with the paramere longer, more finely pointed at apex and with the pegs different. Near the apex (where it begins to narrow) one or two small pegs present on each margin, and more basally, before the constriction (i.e. where it comes in contact with the median lobe) on each side, three or four very dentate, outwardly directed pegs. (Figs. 7–8.)

Holotype ♂, KENYA : Muguga, ii.1953 (*V. F. Eastop*). In author's collection. Paratypes, same locality, various dates, ii–viii.1953, in British Museum (Natural History), Musée Royal du Congo Belge (Tervuren), coll. H. Last and author's collection.

23. **Philonthus porus** sp. n.

Very like *P. kasaiensis* Bernhauer but with shorter antennal segments and different aedeagus ; also like *cumaeus* Tottenham, with which it is closely related in the form of the aedeagus, but differing in the shorter head, shorter and more convex pronotum, clear red basal segment of the antennae, shorter antennae, smaller size, closer, stronger puncturation of the elytra and the non-iridescent abdomen.

Black ; elytra red with the suture narrowly and the scutellary region blackish ; antennae black with basal segment red ; legs brown with tibiae infuscate ; maxillary palpi blackish with apical segment reddish.

Head about as long as broad, sides behind eyes forming an even contour with the outer margin of the eyes, this contour being feebly convex, posterior angles obtusely rounded, behind these angles rather straight (at about 45° to the horizontal) to the neck ; inter-ocular punctures as distant from one another as the antennal bases, near the anterior ocular punctures, which are rather large ; very few small punctures in the post-ocular region ; ground sculpture very superficial, very fine but not close.

Antennae with second segment much shorter than third, fourth and fifth distinctly longer than broad, sixth to tenth scarcely differing in length, all just longer than broad.

Pronotum very convex, as broad as long, broadest at the basal third, where it is much broader than the anterior margin (3·4 : 2), anterior margin a little broader than the head, sides very strongly narrowed anteriorly, nearly straight ; posterior angles very obtusely rounded together with the much rounded base ; discal series each consisting of five rather

large punctures; microsculpture as on the head but a trifle more evident. Scutellum closely and finely punctured.

Elytra short, transverse, widened behind, the posterior width to length from shoulder in ratio 4·5 : 3·5, the sculpture a little stronger and sparser than in *P. varians* Paykull and distinctly stronger and closer than in *cumaeus*.

Abdomen quite as finely punctured as in the latter species but a little more closely at the bases of the tergites and with shorter pubescence. Posterior tarsi with the first segment longer than the fifth and than the second and third together, nearly as long as fourth and fifth together.

The aedeagus is very like that of *cumaeus* and has a similar long slender paramere, but the apical part of the median lobe is gradually narrowed to a point, whereas in *cumaeus* the narrowing almost ceases some distance before the apex, so that the point is more drawn out. (Fig. 29.)

Holotype ♂, NIGERIA: Ibadan, vi.1952. Unique. In coll. H. Last.

24. *Philonthus subaeneicollis* Bernhauer.

Bernhauer, 1931, *J. Linn. Soc. Lond.* (*Zool.*) **37** : 585.

The aedeagus is shown in figs. 24. 25. The paramere, in the upper view, entirely conceals the lateral margins of the median lobe, which extends beyond the paramere in a narrow, parallel-sided piece, rounded at apex. The paramere has three large tooth-like pegs on each side, clearly visible in lateral view.

25. *Philonthus densicauda* Bernhauer.

Bernhauer, 1943, *Rev. Zool.-Bot. afr.* **37** : 290.

The apex of the aedeagus is shown in fig. 23. The paramere is furcate: the median lobe is rather curiously formed at the apex, which is pointed and with a raised keel-like portion extending backwards on its inner face, which is in consequence downward sloping on each side at the apical keeled portion.

26. **Philonthus tumulinus** sp. n.

Black; antennae brownish-black with basal segment brownish-red and second segment pitchy red; palpi reddish; legs reddish-yellow.

Length: 10–11 mm.

Head quadrate; sides behind eyes almost parallel but slightly convergent posteriorly; posterior angles obtusely rounded; eyes a little longer than the sides behind them measured to the bristle; inter-ocular punctures as widely separated as the bases of the antennae and near to the anterior marginal punctures of the eyes: from the second marginal puncture of the eye there is an oblique row of five punctures (including the ocular puncture) on each side to the neck near the middle; on each side two equally strong punctures in line with the fourth of these and parallel to the neck; several other punctures in the post-ocular region: in all five or six punctures along the inner ocular margin; microsculpture more or less transverse.

Antennae with third segment a little longer than second, all the segments much longer than broad, fourth to seventh subequal, eighth to tenth slightly shorter.

Pronotum in front about as wide as the head, distinctly but not strongly widened behind, longer than broad (2·8 : 2·4), sides nearly straight, feebly concave before the middle; posterior angles very broadly rounded with the base; dorsal series each consisting of six punctures; usual lateral punctures; microsculpture as on the head.

Scutellum rather finely, closely, not deeply punctured, especially in the middle.

Elytra longer than the pronotum (3·4 : 2·8), longer than broad (3·4 : 3·2); sides straight, divergent posteriorly, shoulder width 2·4; puncturation moderate, rather close, distinctly stronger and less close than in *fumarius* Gravenhorst.

Abdomen extremely finely and closely punctured at the bases of the tergites, more sparingly towards their apices.

Male.—Anterior tarsi widely dilated; (sternite 8 not examined). Aedeagus rather peculiar; stout, distinctly narrowed apically with apex rather broad and rounded (viewed from above) and with a blunt hook (viewed from the side); on each side of the paramere there is a large elevated area (indicated by dotted line in fig. 26); the paramere is small, widened towards apex, narrowly, triangularly divided apically for a short distance, the apex of each half being nearly straight and slightly oblique; there appear to be at least four long hairs at the apex (paramere not detached, therefore position or number of pegs unknown). (Figs. 26 and 27).

Holotype ♂, TRANSVAAL: Pretoria. In coll. H. Last. Paratype, CAPE COLONY: Grahamstown, ix.1947, ♀ (*M. Schmidt*). In author's collection.

27. *Philonthus iridescens* Tottenham.

Tottenham, 1949, *Trans. R. ent. Soc. Lond.* **100**: 326.

This species was described on a single female. I have now been fortunate enough to receive a male which agrees exactly with the type. The aedeagus is of a somewhat typical form; the median lobe is narrowly rounded at the apex, the sides before the apex parallel (upper view) and then widened about the level of the apex of the paramere, whence they are more or less parallel to the base; the apical part beyond the paramere is very long. The paramere is slender, parallel-sided, narrowed to a point at apex and has five or six marginal pegs on each side near apex (fig. 28.).

28. *Philonthus jacksoni* Cameron.

Cameron, 1950, *J. E. Afr. nat. Hist. Soc.* **20**: 401.

The aedeagus of this species is very distinct. The median lobe is long, nearly parallel-sided, slightly dilated about level of apex of paramere, with the apex broad, flatly rounded, almost truncate; the paramere is furcate, each branch being narrow, parallel-sided and together forming a narrow V (fig. 21). Of the African species known to me it most resembles the aedeagus of *maculipennis* Fauvel, but has a much longer paramere (*vide* Tottenham, 1949, *loc. cit.*: 349, fig. 134); it scarcely differs from the aedeagus of the North American *P. fusiformis* Melsheimer.

29. **Philonthus aminius** sp. n.

This species belongs to the same group as *caffer* Boheman, but is at once distinguished by its entirely black elytra, elongate antennal segments and the structure of the aedeagus.

Black, shining, abdomen a little duller than the fore-parts; head and pronotum a more intense black than the elytra and abdomen; antennae black; legs yellow-brown with the tibiae infuscate.

Head quadrate, sides behind eyes parallel and (measured to bristle) about half the length of the eye; posterior angles obtusely rounded; inter-ocular punctures as wide apart as the bases of the antennae and close to the ocular punctures; two small punctures at the base a short distance before the neck; a very large puncture each side between these and the posterior angles of the head; several other smaller punctures along the base and in the post-ocular region; ground sculpture exceptionally close and fine, scarcely visible under a strong magnification. Antennae with third segment distinctly longer than second, fourth longer than broad, its length being about one and a half times its apical width, fourth to tenth decreasing in length and increasing in width, tenth only just longer than broad (feebly transverse in one aspect), eleventh short.

Pronotum slightly wider than base of head, distinctly longer than broad; sides parallel; apical margin straight; anterior angles marked, almost rectangular; posterior angles obtusely rounded together with the base; discal series each consisting of five punctures, apparently variable, either more or less equally spaced or with punctures three and four closer together. Ground sculpture as on head.

Scutellum fairly strongly and closely punctured.

Elytra longer than broad, strongly and closely, regularly punctured, the punctures being very much closer and less strong than in *caffer* Boheman, a little larger than in *quisquiliarius* Gyllenhal.

Abdomen closely and regularly punctured, the punctures a little sparser and deeper on the basal segments, becoming closer and less deep towards the apex and also a little less close towards the apical margin of each segment.

Posterior tarsi with the first segment equal to the fifth and nearly as long as the second and third together.

Length: 8–9 mm.

Male.—The aedeagus is of similar structure to that of *caffer*, but the paramere is more abruptly narrowed behind the enlarged apical part and the pegs are somewhat differently arranged and more numerous. (Figs. 9–10.)

Holotype ♂, KENYA: Muguga, i.1953. Paratype ♀, same locality, ii.1953 (*V. F. Eastop*). In author's collection.

30. *Philonthus nairobianus* Cameron.

Cameron, 1950, *J. E. Afr. nat. Hist. Soc.* **20**: 400.

The original description of this species, based upon the unique type in the British Museum, is very brief, not entirely accurate and in some respects misleading. It is as follows:

"Shining black, the elytra yellow; thorax with dorsal row of four small punctures; abdomen strongly iridescent. Antennae black, the first segment reddish-yellow. Femora reddish-yellow, tibiae and tarsi infuscate. Length 9 mm. A little narrower and smaller than *affinis* Roth, the head and thorax without metallic reflex, the former narrow, suborbicular; antennae much longer and thinner, the penultimate segments a little longer than broad, the punctures of the dorsal row much smaller, puncturation of elytra a little closer; abdomen scarcely as closely punctured. First segment of posterior tarsus longer than the last."

The head is nearly black, with a slight brownish tint in good light; the pronotum is brown or reddish-brown, lighter at the anterior angles; the scutellum is dark brown; the elytra are yellow or pale brownish-yellow, less red than in *affinis*; the abdomen is basically brown, the colour rather hidden by

the strong iridescence, which might be described as predominantly crimson, especially in apical half, but varying to purple or blue (especially basally) with some green, according to the angle of the light. The colour of the antennae is difficult to describe with accuracy ; in poor light they could be described as dull dark brown or blackish-brown, in good light as reddish-brown ; the basal segment is a somewhat translucent reddish-yellow and so is the basal third of the second segment, the colour rather sharply defined ; the legs are yellowish-brown or reddish-yellow with the tibiae infuscate, and the tarsi in some lights also somewhat infuscate. In general appearance it would seem more natural to compare the insect with one of the brown species, such as *dollmani* Bernhauer or *bidentiformis* Tottenham, rather than with *affinis*, but it has not much in common with either of these three species. I do not know any species which it could be said to resemble.

Head transverse oval (19 : 16), about as wide as front of pronotum ; much more like the head of *tenuicornis* Mulsant & Rey (but smaller than the head of the female of that species) or of a large *ventralis* Gravenhorst male than like the head of *affinis*. Eyes slightly longer than sides behind eyes (measured to bristle which is small and not conspicuous) ; sides almost parallel behind eyes, scarcely divergent to posterior angles which are very obtusely rounded. Ground sculpture extremely close and fine. Inter-ocular punctures widely distant, nearly as far apart as antennal bases, three times as distant from one another as from anterior marginal punctures of eyes and situated a little anterior to these. From the second marginal puncture of eye an oblique row of punctures (four in all) to near middle of neck. From basal puncture of this row is a marginal row of four or five punctures on each side along extreme margin of posterior angles ; between these and posterior marginal puncture of eye are two other larger punctures. Antennae long and slender, more slender than those of *affinis* and perhaps in proportion to the size of the insect a little longer but not actually longer ; third segment much longer than second, fourth to seventh subequal, a little shorter than second, eighth to tenth decreasing in length, eleventh about one and a half times as long as tenth, all segments distinctly longer than broad, middle segments much longer.

Pronotum about as long as broad, narrowed in front, sides nearly straight, scarcely concave, anterior angles, from above, obtuse and rather rounded, posterior angles strongly rounded with rounded base ; each dorsal row consists of four moderate, rather shallow punctures ; five lateral punctures similar ; ground sculpture similar to that of head. Contour of pronotum quite different from that of *affinis* and more like that of *longicornis* Stephens, but sides not quite so narrowed in front and pronotum more convex.

Punctures of scutellum a little smaller than those of elytra ; sparse on basal third, apically closer than on elytra.

Elytra a little longer in proportion to their width than in *affinis* ; their puncturation somewhat similar but more regular and uniform, on the average slightly smaller ; whether it could be described as a little closer or a little sparser depends, in my opinion, based on a comparison with two specimens of *affinis*, on the portion of the elytra of this species with which comparison is made.

Sculpture of abdomen unlike that of *affinis* ; more aptly to be compared with that of *moquerysi* Fauvel, which it rather closely resembles in strength but is on the whole much sparser ; puncturation fine, moderately close on first three visible tergites, except for middle of apical part of each which is impunctate ; on succeeding segments much sparser and more uniformly distributed over whole of segments ; on eighth segment yet sparser and rather irregular in size ; last segment impunctate.

Anterior tibiae rather short and stout, pubescent ; posterior tarsi about as long as tibiae, with first segment much longer than fifth, a little longer than second and third together.

Male anterior tarsi dilated, especially two basal segments which are about twice as broad

as fourth ; sternite 8 emarginate at apex. Aedeagus shown in fig. 22, in which the pegs, which are really on inner face of paramere, are indicated. Pegs situated along extreme apical margin in a close row, with two or three others in each corner. Viewed laterally apex of median lobe straight and rather slender, about half as wide as in upper view, and apical part beyond paramere a little inclined at an angle to rest of lobe.

Length 11 mm. (abdomen extended).

31. **Philonthus tabius** sp. n.

This species is closely related to *ocypoides* Schubert, *salti* Tottenham and *irritans* Tottenham and resembles them in its brown colour, black head and four-punctate discal series of the pronotum ; it may be distinguished from all three by its broader form, more closely and finely punctured elytra and by the form of the aedeagus.

Shape of head similar to that of *salti*, and punctures on the head much the same but ground sculpture weaker, more evanescent but with more numerous and evident micro-punctures. The same remark applies to the ground sculpture of the pronotum. Pronotum much more transverse than in *salti*, the anterior angles more acute, the sides straight, diverging distinctly posteriorly, the hind angles more obtusely rounded with the base. Scutellum more closely and finely punctured. Elytra broader in proportion to their length and also more closely and finely punctured ; abdomen more closely punctured. Antennae similarly constructed to those of *salti* but with the penultimate segments more transverse ; these segments cannot be called serrate, but they are a little more widened apically on one side than on the other.

In the male the anterior tarsi are dilated ; the sternite of segment 8 deeply divided for about half its length, so that the apical margin presents more or less two rounded broad lobes. Aedeagus very like that of *irritans* Tottenham, having the paramere longer than the median lobe, narrow and pointed, closely studded with pegs in two irregular marginal rows for nearly two-thirds of its length. Median lobe (upper view) concealed by the paramere at its apex, with (side view) a slightly enlarged hooked apical portion (figs. 11–15). It differs from that of *irritans* in that the median lobe (side view) is not widened a little below the hooked portion and therefore is not approximate to the paramere until the base of the latter.

Apart from the finer elytral puncturation and the differences in the aedeagus, the new species may also be separated from *irritans* by its more transverse penultimate segments of the antennae.

Holotype ♂, Cape Colony : Queenstown, xii.1949 (*V. Whitehead*). Paratype ♀, Orange Free State : Springfontein, i.1948 (*P. Jackson*). Both in author's collection.

32. **Philonthus lasti** sp. n.

This species is so like others of the *ocypoides* group as to require no separate description ; it will suffice to point out its distinctive characters.

Length about 12 mm. and in size, therefore, it comes near to *P. salti* Tottenham. Both species have the antennae reddish, but in *lasti* they are shorter, not reaching the posterior margin of the pronotum, and have the penultimate segments more compact, distinctly transverse, each segment being more parallel-sided than in *salti* ; segment 4 is only a little longer than broad ; in *salti* the antennae reach fully to the posterior margin of the pronotum the penultimate segments are loosely connected, less transverse and with the sides more sloping, the fourth segment is considerably longer than broad. The head is very similar

in shape in the two species, but in *lasti* the sides, from the hind margin of the eye to the bristle of the hind angle, are distinctly longer than the width of the eye seen from above, whereas in *salti* they are shorter. The pronotum is slightly more transverse, 3·3 : 2·8 compared with 3·1 : 2·9. The elytra are a little longer ; their puncturation is very similar in size but very much closer, the majority of the punctures being separated by less, or scarcely more, than their diameters from the adjacent punctures (at least those lateral to them), whereas in *salti* the puncturation is relatively sparse, most of the punctures being separated from one another by intervals fully their width. The abdomen is more strongly punctured, the punctures being more rugose than in *salti* and not much smaller than those on the elytra. The head and pronotum lack micro-sculpture, but in *salti* this is distinct, though fine.

In the structure of the penultimate segments of the antennae *lasti* more closely resembles *tabius* Tottenham, but it may be distinguished from that species by the much less fine puncturation of the elytra and abdomen and by its more slender form.

It differs from *ocypoides* Schubert in its smaller size and more transverse penultimate segments of the antennae. This species I know from a female named by comparison with a male so determined by Bernhauer. Judging by this specimen the sculpture of the two species is almost identical. The head of *ocypoides* is less quadrate, but this may be a sexual difference. The two species, however, may be easily separated by the aedeagus.

The aedeagus of *lasti* is long and slender, with the median lobe bluntly pointed at the apex where, viewed laterally, it has a rather long hook. The paramere is very long, reaching to the base of this hook and divided for fully two-thirds of its median length into two slender, narrow, not widely separated, more or less parallel prongs (Fig. 30). In *ocypoides* the median lobe is broader, more rounded at apex, and the paramere is not divided.

Holotype ♂, Belgian Congo : 12.v.1953. Unique. In coll. H. Last.

33. **Philonthus balbus** sp. n.

Extremely like *P. lasti* Tottenham, but differing in its larger size (15 mm.), broader form, darker colour and slightly more strongly and slightly more sparingly punctured elytra. The reddish-brown colour of the pronotum and elytra is slightly but appreciably darker ; the antennae are pitchy brown, with the apical half of the last segment pale yellow and the basal two segments reddish, only these two segments being the same colour as the maxillary palpi. In *P. lasti* the antennae, except for the pale tip of the last segment, are almost uniformly reddish and scarcely differ from the colour of the palpi.

The abdomen of *balbus* is more infuscate with slightly stronger sculpture. If viewed directly from above, the side margin of the head behind eye extends as far as the hindermost part of the eye in *P. lasti*, whereas in *P. balbus* the sides are distinctly visible for a short distance in front of the hind angle of the eye. The aedeagus is very much alike in the two species, but the elongate slightly raised plateau from the apices of paramere to apex of median lobe is lacking in *balbus* where there is a slight trace of a raised keel. If viewed laterally the median lobe in *lasti* is evenly, slightly curved on both outer and inner edge, whereas in *balbus* it is distinctly bent before the middle.

Holotype ♂, Uganda : Kawanda, 11.iv.1954. Unique.[2] In coll. H. Last.

Key to the males of the ocypoides*-group*

1. Aedeagus with paramere furcate or divided at apex for part of its length 2
   Aedeagus with paramere simple 4

[2] Since this description was written Mr. Last has received further specimens, one of which, a male from Kampala, he has kindly presented to the author.

2. Paramere extending beyond apex of median lobe, divided for much less than half its median length . . . . . **salti** Tottenham
   Paramere not reaching apex of median lobe, divided for the greater part of its median length 3
3. Median lobe in lateral view with both edges evenly arcuate; size smaller, 12 mm.; temples only extending to hind angle of eye **lasti** sp. n.
   Median lobe in lateral view with both edges a little bent near middle; size larger, 15 mm.; temples extending beyond hind angle of eye **balbus** sp. n.
4. Aedeagus rather broad; paramere not reaching apex of median lobe **ocypoides** Schubert (*sensu* Bernhauer)
   Aedeagus long and narrow; paramere extending beyond apex of median lobe 5
5. Antennae with the penultimate segments at least as long as wide **irritans** Tottenham
   Antennae with the penultimate segments short, distinctly transverse **tabius** Tottenham

Corrigenda.

In my paper on the African species of *Philonthus* (1949, *Trans. R. ent. Soc. Lond.* **100**) the following alterations should be made:

Page 330: Key, alternative to 5, read "elytra very narrowly *black*. . . ."
Page 335: Nr. 57 (4th line) for "*purpurcephalicus*" read "*caedator*" sp. n.
Page 360: Fig. 173 and page 362 Nr. 104 for "Bernhauer" read "(Bernhauer)."

PART IV.

The Species of the *thermarum*-Group (**Gabronthus** gen. n.).

There has been much confusion amongst the species of this group; many different species have been confused under the names *thermarum* Aubé and *maritimus* Motschulsky; a number of names have been wrongly placed in synonymy with *thermarum*; authors have not been in agreement as to the generic status of the species, some placing them in *Philonthus* and others in *Gabrius*. In attempting a revision of the species I have been forced to confine myself almost exclusively to those species which I have been able to study, only in two cases has it been possible to include the species from the original descriptions. It is possible that there are several other already described species which should be included in the group, but whether this be so or not cannot be ascertained from the descriptions. For example there are several species (e.g. *separatus* and *kamatembeanus*), recently described by Cameron from the Belgian Congo; he has placed them under the name *Philonthus* (*Gabrius*), but does not state in what sense he is using the name *Gabrius*, i.e. whether *sensu* Gridelli, which would exclude *thermarum* etc., or *sensu* Jeannel and Paulian, which would include these species. He compares two of them with *thermarum* from which it might be inferred that they belong to the group under consideration. The descriptions are to a large extent comparative; this is inevitable in many of the species of the group, but whether the description could or could

not apply to some of the species depends on the meaning attached to such a statement (under *separatus*) as " in other respects like *thermarum*." Does this mean that the aedeagus is identical with that of *thermarum* or does it mean that it is quite different as is the case in all the other species I have examined ? The difficulty of interpreting the comparative differences is increased by the fact that this author places at least two other species in synonymy with *thermarum*, namely *inclinans* Walker and *pygmaeus* Kraatz (Cameron, 1932, *Fauna Brit. India, Staph.* **3** : 134).

Gridelli (1920, *Ann. Mus. Stor. nat. Genova* **49** : 154) places the two species *thermarum* and *maritimus* in *Philonthus*, pointing out that they do not possess the essential characteristic of *Gabrius*. In the latter genus the aedeagus is situated dorso-ventrally in the abdomen, whereas in *Philonthus* it is placed so that the paramere lies on the left side.

Jeannel and Paulian (1945, *Mém. Mus. nat. Hist. nat., Paris* (n.s.) **19** : 79), on the other hand, place these species and their allies in *Gabrius* and, in order to do so, they re-define *Gabrius*, With regard to Gridelli's paper these authors state : " D'après lui, l'organe copulateur différerait par la position du tegmen, parfaitement symétrique sur la face ventral du lobe médian chez *Gabrius*, au contraire asymétrique et déjeté vers le côté droit chez les *Philonthus*. A la vérité, cette distinction tombe d'elle-même. Le *P. politus* L., type du genre, a son tegmen en position médiane et parfaitement symétrique." This seems to me to be a complete misunderstanding of what Gridelli said, namely : " Nei *Philonthus* il paramero è semplice o bifido a seconda dei casi, è però sempre aderente al lato *sinistro* " (italics mine) " del pene . . . Il lato destro del pene è solcato da una doccia debolmente chitinizzate che cessa inferiormente all'apice nel punto dal quabe viene estroflesso il sacco interno " and " I *Gabrius* invece . . . il pene presenta due facce, l'una dorsale collo sbocco del sacco interno, e l'altro ventrale, alla quale è unito il paramero " (*op. cit.* : 116). Furthermore (p. 154) he said : " *P. maritimus* Motsch. *thermarum* Aubé sono due veri *Philonthus* perchè hanno il paramero inserito lateralmente al pene ".

It is perfectly clear from this that Gridelli is referring to the position of the aedeagus in the abdomen, where the paramere is attached to the left side of the median lobe in *Philonthus* and to the ventral face in *Gabrius*. He mentions that the paramere of *Philonthus* may be bifid or simple, but does not make any reference to those species in which the paramere is placed asymmetrically on the median lobe, directed towards its lower edge, i.e. to the right of the lobe when examined with paramere uppermost.

In spite of the fact that Jeannel and Paulian reject, and rightly so, the asymmetrical position of the paramere on the side of the median lobe as a distinguishing characteristic of *Philonthus*, yet they eliminate *altissimus* Bernhauer from *Gabrius* (as reconstituted by them), although it has the required external characters, because the " sexual characters are those of *Philonthus* " ; but if in *Gabrius* there are to be included species with laterally placed aedeagus (including both furcate and simple forms of paramere), the only distinction left between the form of aedeagus of *altissimus* and the *Gabrius* species is that in this species the paramere is situated asymmetrically on the aedeagus. I have not seen this insect but think they are probably correct in placing it in *Philonthus*.

Jeannel and Paulian, in their attempt to include *thermarum*, etc., in *Gabrius*,

have proposed as a possible distinguishing character of the genus the entirely smooth last tergite. Although this character may be true for *Gabrius* species and the *thermarum* group, it would not eliminate some true species of *Philonthus*.

In my opinion the species of the group should be placed in a separate genus, for which I propose the name **Gabronthus** gen. n., with *Gabrius maritimus* Motschulsky as the type species. The species in this genus form a very homogeneous group ; they are all very much alike, easily distinguished from *Gabrius* by the form of the aedeagus and from *Philonthus* by the structure of the labial palpi. In all the species known to me each dorsal series on the pronotum consists of five punctures, the head is rather elongate, usually quadrate rather than oval, with the sides behind the eyes parallel or slightly divergent towards the posterior angles ; the eyes are small and the sides behind long ; the pronotum is very much alike in the species, being nearly parallel-sided, but little contracted anteriorly ; the sculpture of the elytra varies according to the species, it is frequently shallow and often irregular in size and spacing.

The species of the three genera may be distinguished by the following key :

1. Aedeagus situated in the abdomen with the paramere on the left . . 2
   Aedeagus situated in the abdomen with the paramere on the ventral face ; pronotal series each of five or more punctures ; labial palpi with penultimate segment much broader than the last : anterior tarsi not dilated in ♂ . . . . . **Gabrius** Stephens
2. Labial palpi with the penultimate segment narrow, about as broad as the last ; pronotal series of punctures variable in number (or occasionally wanting). Size generally larger . **Philonthus** Stephens
   Labial palpi with the penultimate segment much broader than the last ; pronotal series each consisting of five punctures ; head longer than broad, usually somewhat quadrate, eyes small ; size very small, not exceeding 5·5 mm. (i.e. not larger than *maritimus* Motschulsky) . . . . . **Gabronthus** gen. n.

All the species of *Gabrius* with 5-punctate pronotal series known to me have the ninth sternite prolonged anteriorly into a spiculum : this will probably be another distinction between *Gabronthus* and the 5-punctate species of *Gabrius*.

In the genus *Gabronthus*, in spite of the close similarity of the species, with the exception of *tenuissimus* Tottenham and *minutissimus* Bernhauer, it is possible to determine the males of all the species without resort to comparative characters, as will be seen from the keys which follow. The distinctions afforded by the aedeagus are such as can not only be figured but also readily described. The median lobe of the aedeagus is of two types : (1) with a pair of arcuate raised ridges, sometimes rather crenulate, on each side of the inner face, about the level of the apical part of the paramere which lies in the depression between them ; (2) without lateral ridges but usually with a tooth, keel or ridge, sometimes crenulate, in the centre of the inner face opposite the apical part of the paramere. There are also differences in the contour of the apical part of the median lobe. The paramere is of three types : (1) furcate at the apex, the branches of the fork being narrow and parallel-sided like the prongs of a fork with 3 apical pegs each or dilated and leaf-like with many pegs, mostly lateral ; (2) simple, more or less parallel-sided to the apex which is broad, truncate or flatly rounded ; in this form there are usually three pairs of pegs,

all of them being situated near the apex and only the two most apical pegs marginal ; (3) simple, narrowed to a point at the apex, the apical portion therefore being triangular, with at least two pairs of pegs marginal, the third pair being either marginal or central and a considerable distance basal to the others. Like the median lobe, the contour of the paramere varies according to the species. Amongst those species with paramere of form two, I believe that in some cases the arrangement of the pegs will help to provide specific characters ; but it must be noted that in *maritimus* and *minutissimus* there is some measure of variability.

From the evidence before me it would seem that the continent of Africa and the oriental region have two different faunas as far as the species of this genus are concerned ; consequently I am placing them in separate keys. Since, however, there is the possibility of there being some overlap in the cases of *thermarum* Aubé, *maritimus* Motschulsky, *inclinans* Walker and *mgogoricus* sp. n., I will add a few remarks at the end of the paper to show how they would fit into the other fauna.

(a) *The African Species.*

Key to the males.

1. Paramere simple 4
   Paramere furcate 2
2. Paramere with the two branches of the fork narrow and parallel-sided, each with three close pegs at apex 3
   Paramere with the two branches of the fork with their outer margins not parallel, strongly diverging from the apex, the paramere being widest about the level of the base of the division ; each branch with about six pegs, most of which are marginal along the divergent edge . . . . . 1. **alluaudanus** Jeannel & Paulian
3. Aedeagus short and broad in the upper view, the narrowed apical portion being almost an equilateral triangle, the distance between its apex and that of the paramere being about equal to its width at the level of the latter ; median lobe with a distinct keel down the centre towards apex ; in the lateral view, median lobe rather stout at apex, distinctly but bluntly hooked on the inner face opposite the apex of the paramere . . . . . 3. **pluvialis** sp. n.
   Aedeagus long and slender ; median lobe (upper view) with apical part elongate, the distance between its apex and that of paramere considerably greater than its width at the apex of the latter, without central keel ; in the lateral view the median lobe slender towards apex, without distinct prominence opposite apex of paramere 2. **thermarum** Aubé
4. Median lobe (lateral view) with a strong triangular tooth opposite apex of paramere, (upper view) broad towards apex, scarcely pointed, the tooth showing as a distinct central keel or elongate tubercle ; paramere almost parallel-sided in apical half, broadly rounded at apex, with two apical pegs and four very small indistinct pegs near the apex forming more or less a square in the centre . 8. **kisiranus** sp. n.
   Median lobe (lateral view) without strong tooth near apex, either with or without central keel below the level of apex of paramere, or with a pair of arcuate ridges, one on each side of the apical part of paramere (upper view) 5

5. Median lobe (lateral view) with a blunt hook on the outer face near the apex and with apex pointed (upper view) 9. **oribates** Jeannel & Paulian

Median lobe (lateral view) without apical part forming a distinct blunt hook on outer face 6

6. Median lobe with a pair of arcuate lateral ridges on its inner face about the level of the apical part of the paramere which lies in the depression between them; paramere with apex truncate, broadly flatly rounded or very bluntly pointed, its sides more or less parallel in apical half, the pegs all apical, at the most the two apical pegs marginal 13

Median lobe without arcuate lateral ridges at level of apical part of paramere, usually (upper view) with a small tubercle or central keel or ridge opposite apical inner face of paramere 7

7. Paramere with apical half more or less parallel-sided, the apex more or less truncate or flatly rounded, all the pegs apical, only apical pair marginal 8

Paramere with apical part more or less triangular, the apex being a point in most species; always at least two pairs of pegs marginal 9

8. Puncturation of elytra very fine, moderately close, more or less like that of *fundator* but much sparser . . . . . 10. **tenuissimus** Tottenham

Puncturation of elytra not fine, more irregular in size, more or less like that of *pluvialis* but sparser and more superficial 11. **minutissimus** Bernhauer

9. Paramere with the three pairs of pegs all more or less marginal, one near apex, one at widest part and one midway between these 12. **turneri** Tottenham

Paramere with the three pairs of pegs arranged—one marginal near widest part, one marginal between this and apex, one central a considerable distance basal to these two 10

10. Paramere with front pair of pegs twice as distant from apex as from second pair 11

Paramere with front pair of pegs as near or nearer to apex than to second pair 12

11. Paramere not dilated before apical part and without differences of pigmentation; median lobe with apical part twice as long as width at tubercle (upper view) . . . . . 13. **gombanus** sp. n.

Paramere slightly dilated before being narrowed to apex, the apical triangular portion not pigmented; median lobe with the apical part one and a half times as long as width at tubercle (upper view) 14. **kosanus** sp. n.

12. Paramere (lateral view) reaching well beyond the beginning of the enlarged apical part of the median lobe which is rather long and slender; elytra rather sparingly punctured . 15. **chyuluensis** Cameron

Paramere (lateral view) only reaching a short distance beyond the beginning of the enlarged apical part of the median lobe, which is rather short and stout; puncturation of elytra rather close and uniform . . . . . 16. **fundator** sp. n.

13. Median lobe (upper view) broad at apex where it is much broader or fully as broad as apical part of paramere; the apical margin truncate or very broadly rounded 14

Median lobe (upper view) distinctly narrowed to apex where it is narrower or not broader than the apical part of paramere, the apex bluntly pointed 15

14. Median lobe (upper view) with sides almost parallel to apex or very slightly convergent but straight, the apical margin almost truncate, very feebly rounded ; distance between the apices of the median lobe and paramere distinctly greater than the width of the former at the apex of the latter . . . . . 5. **mgogoricus** sp. n.

Median lobe (upper view) with sides a little convexly curved to apex, the apex broadly rounded ; distance between the apices of median lobe and paramere about equal to width of the former at the apex of the latter . . . . . 7. **badalus** sp. n.

15. Apex of median lobe (upper view) drawn out into a narrow blunt point, the sides of the apical portion equal to twice the width at its base ; paramere broad and almost truncate at apex
4. **maritimus** Motschulsky

Apex of median lobe ending in a rather broad rounded point, the sides of the apical portion not exceeding one and a half times its basal width ; paramere bluntly pointed at apex where it is somewhat narrowed . . . . . 6. **meridionalis** Cameron

1. *Gabronthus alluaudanus* (Jeannel & Paulian).

Jeannel & Paulian, 1945, *Mém. Mus. nat. Hist. nat., Paris* (n.s.) **19** : 90.

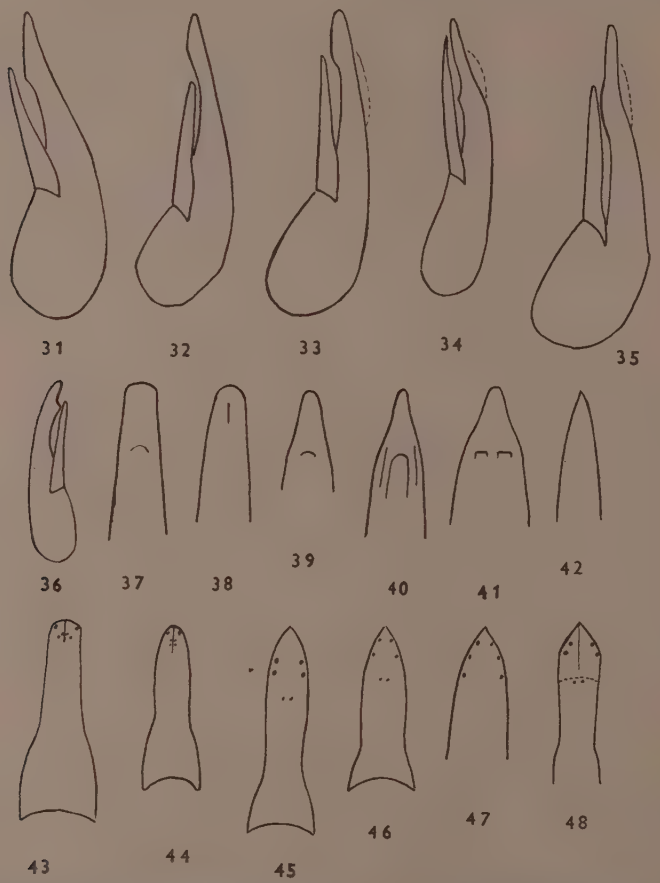
This species I am including in the genus because the authors associate it with *thermarum*, etc., and it is far more likely to belong to this genus than to *Gabrius*. It resembles *thermarum* and *pluvialis* in having a furcate paramere, but differs from both these insects in the form of the fork. Whereas in the two species named the branches of the fork are close together, narrow, with both sides practically parallel and with three pegs at the extreme apex of each branch, in *alluaudanus* the outer margins of each branch diverge from the apex, so that the paramere is considerably widened at about the level of the base of the furcation ; also each branch has about six pegs, mostly along the outer margin before the widest part. The species is described from Madagascar and the aedeagus has been figured by the authors (*loc. cit.*).

2. *Gabronthus thermarum* (Aubé).

Aubé, 1850, *Ann. Soc. ent. Fr.* (2) **8** : 316.

This species is listed as being cosmopolitan. Since, however, many species have been confused under the name and some of the names which have been placed in synonymy with *thermarum* in fact refer to distinct species, some of the records may prove to be erroneous. Only a critical examination of actual specimens from various parts of the world can decide its range, which is evidently wide. I have seen specimens not only from various parts of Europe, but also from the Belgian Congo and from the West Indies. None of the oriental specimens, so named, which I have seen, is the true *thermarum*. It is easily recognised by the aedeagus, which unlike most of the species, has the paramere furcate. In this respect it can only be confused with the African *pluvialis*

sp. n. but is easily distinguished from this species by the long, slender median lobe (fig. 42), the narrowed apical part of which (upper view) is an elongate triangle, whereas in *pluvialis* the part beyond the paramere is more or less an equilateral triangle. Both species have the branches of the paramere narrowly separated, with all sides more or less parallel and with the pegs at the extreme apex, three on each. The median lobe lacks the central keel of *pluvialis* ; the lateral view is shown in fig. 32.



Figs. 31–48.—(31)–(36) Aedeagus, lateral view, of: (31) *Gabronthus pluvialis* sp. n.; (32) *G. thermarum* (Aubé); (33) *G. fundator* sp. n.; (34) *G. chyuluensis* (Cameron); (35) *G. meridionalis* (Cameron); (36) *G. kisiranus* sp. n. (smaller scale). (37)–(42) Apex of median lobe, upper view, of: (37) *G. mgogoricus* sp. n.; (38) *G. kisiranus* sp. n.; (39) *G. meridionalis* (Cameron); (40) *G. maritimus* (Motschulsky); (41) *G. pluvialis* sp. n.; (42) *G. thermarum* (Aubé). (43)–(48) Paramere of; (43) *G. maritimus* (Motschulsky); (44) *G. mgogoricus* sp. n.; (45) *G. gombanus* sp. n.; (46) *G. chyuluensis* (Cameron); (47) *G. turneri* (Tottenham); (48) *G. kosanus* sp. n.

3. **Gabronthus pluvialis** sp. n.

Another species of the *thermarum* group, but differing from that species in size, colour, puncturation and in the form of the aedeagus.

Black, with the elytra brown or blackish-brown and with the apical margins of the abdominal segments brown; antennae black with the first two segments yellow; legs yellow with the tibiae infuscate. In build similar to *thermarum* Aubé but larger (5 mm.) and with the head quite parallel-sided. The elytra are more strongly and more closely punctured than in that species; the abdomen is more sparingly punctured and a little more strongly than in *thermarum*. The pronotum is distinctly narrowed in front.

Male: Sternite of eighth segment feebly, narrowly emarginate in middle of apical margin with a small triangular depigmented area before the emargination. The aedeagus of the same general form as that of *thermarum* with similar paramere, but the median lobe is much broader (viewed from inner or outer face) (figs. 31, 41).

Holotype ♂, KENYA: Muguga, ii.1953 (*V. F. Eastop*). Paratypes, same data, 10 ♂ and 7 ♀. In author's collection.

4. *Gabronthus maritimus* (Motschulsky).

So many species have been confused with *maritimus* Motschulsky that it would appear to be necessary to see the type in order to be sure of the identity of the species. However, the species was described from the Egyptian coast; I am therefore assuming that Egyptian specimens are the true *maritimus* rather than species from distant parts of Africa. *G. maritimus* appears to be very variable in colour and to a slight extent in the puncturation of the elytra. This puncturation is closer and more uniform than in any of the many species which have been included under that name. The aedeagus has the median lobe, viewed from above, narrowed apically to a very blunt, i.e. rounded, point (fig. 40); viewed laterally there may be seen a distinct, but not strong, slightly arched ridge opposite the apex of the paramere and lateral to it (cf. fig. 35): in front of these ridges there is a very slight dent on the inner face margin of the median lobe before the apical portion, interrupting the contour. The paramere is short, simple, more or less truncate at the apex; there is a peg in each corner at the apex and four others placed arcuately (convex towards apex) a short distance down (fig. 43); there is a faint trace of a suture down the centre at the apex; the apical portion of the paramere is not quite parallel-sided, but the sides diverge slightly towards the base.

5. **Gabronthus mgogoricus** sp. n.

Very close to *maritimus* Motschulsky, and a large number of African specimens which have been named by various authorities as *maritimus* are in reality the present species. It may be distinguished at a glance from *maritimus* and from all the other African species known to me by the very broad apex of the median lobe of the aedeagus. Apart from this and other characters of the aedeagus it is extremely like *maritimus* in most respects, but elytra are distinctly less closely and a little less uniformly punctured than in that species; also puncturation of abdomen is a little finer and closer. General colour appears to be darker than is often the case in *maritimus*.

Median lobe of aedeagus, viewed from above, almost parallel-sided towards the apex, where it is broad, almost truncate but with corners rounded (fig. 37); the arcuate ridges on each side of the apex of the paramere very distinct, clearly seen from this view and very obvious from the lateral view by reason of their dark edges (cf. fig. 35); between these ridges the lobe is broadly depressed for the apex of the paramere; viewed laterally the apex is shorter than in *maritimus* and does not extend quite so far beyond the apex of the paramere. The paramere of similar build to that of *maritimus* but somewhat narrowed towards the apex (fig. 44), consequently the apical pair of pegs are closer together; the other four pegs form more or less a square in the centre; there can often be detected a longitudinal space or suture which is parallel-sided and of the width of the square of pegs; on the outer face there is an evident depression towards the apex.

Holotype ♂, RHODESIA: Mashonaland, Salisbury (*Marshall*). Paratypes, 1 ♂, 4 ♀, same data; NATAL: Frere (*Marshall*), 2 ♂, 1 ♀; Isipingo, ii.1896 (*Marshall*); CAPE COLONY: Pondoland, Port St. John, 7–13.viii.1923 (*R. E. Turner*), 3 ♂, 3 ♀; Transkei, Umtata, 18.ii.–18.iii.1923 (*R. E. Turner*), 2 ♂, 4 ♀; E. Cape Prov. Katberg, 4000 ft., 1–15.i.1933 (*R. E. Turner*); ORANGE FREE STATE: Harrismith, 1–20.iii.1927, 1 ♂, 1 ♀; TANGANYIKA: Dar-es-Salaam, xii.1918, 1 ♂. All in British Museum (Nat. Hist.), the males being paratypes.

6. *Gabronthus meridionalis* (Cameron).

Very closely related to *maritimus* Motschulsky and to *mgogoricus* sp. n. and in many respects intermediate between these two species. From the former it may be distinguished by the blunter apex of the median lobe of the aedeagus and by the more pointed paramere with different arrangement of pegs; from the latter by the fact that the median lobe is distinctly narrowed to the apex where it forms a rounded point. The antennae resemble those of *mgogoricus*; the puncturation of the elytra, however, is closer, finer and more uniform, much more like that of *maritimus* but with the punctures a little smaller and less deep. The puncturation of the abdomen is as strong as in *maritimus* but a little closer. From both species it may be generally known by its darker colour: the pronotum is black, the elytra usually pitchy brown and the tibiae distinctly infuscate. The colour of the elytra, however, appears to be somewhat variable, one of the specimens from Mossel Bay having the elytra dark at the base but distinctly red in apical half. The elytra, as in most of the species, have a tendency to be a little lighter at the apical margins and especially at the external hind angles. The aedeagus has the median lobe very like that of *maritimus*, but the apical point is wider (fig. 39); it shows the characteristic ridges at the sides near the apex of the paramere as seen in *maritimus* and *mgogoricus* (fig. 35). The paramere is bluntly pointed at the apex and the pegs are arranged as in *maritimus* except that the two apical pegs are much closer together on account of the narrowed apex.

Originally recorded from CAPE COLONY: Simon's Town. There are specimens in the British Museum from CAPE COLONY: Mossel Bay and Table Mountain.

7. **Gabronthus badalus** sp. n.

Extremely like *thermarum* Aubé and very difficult to distinguish with certainty by characters other than the aedeagus; this organ, however, is quite

distinct. In the two males which I have examined the elytra are a little longer than in *thermarum*, their puncturation is a little closer, the abdominal segments are a little more closely punctured especially at the bases of the segments and the antennal segments are a little shorter.

The aedeagus has the median lobe broadly rounded at the apex (cf. fig. 38); the curved sides of this portion (viewed from above) and the fact that the apical margin is curved will distinguish the species from *mgogoricus*, in which both sides and apical margin are straight; also the distance between the apices of the median lobe and the paramere is less, being about equal to the width of the median lobe at the level of the apex of the paramere in *badalus*, but distinctly greater than this width in *mgogoricus*. This latter character and the convexly curved sides of the apex and the broad apex will also distinguish the species from *meridionalis* Cam. Viewed laterally the apex of the median lobe is much shorter than in *mgogoricus*, being about twice as long as its width at the beginning of the arched keel, instead of fully three times as long. The paramere, also, is a little broader.

The species may be distinguished from *meridionalis* also by the fact that the pronotum is a little narrower, the head is less oblong, distinctly widened behind, with posterior angles rounded and much less marked than in *meridionalis*, and the elytra more sparsely punctured, some of the punctures on the disc being distinctly larger than the others.

Holotype ♂, S. NIGERIA: without more precise detail as to locality, 24.vi.1913, from a *termitarium* (*Dr. W. A. Lamborn*) in the British Museum (Nat. Hist.). Paratypes, same data, 1 ♂, 4 ♀, in the British Museum (Nat. Hist.). Ibadan, 28.iii.1952, 3.ii.1953, 4, in coll. H. Last.

8. **Gabronthus kisiranus** sp. n.

Very similar to *thermarum* Aubé, from which it differs in the following respects:

The aedeagus is differently constructed; the head is narrower and more oval, much more obtusely rounded at the posterior angles; the pronotum is a little narrower, narrower in proportion to the elytra with anterior margin more sloping towards the anterior angles which are consequently more obtuse; the abdomen is more closely and finely punctured and pubescent.

The aedeagus has the median lobe, viewed from above, very briefly narrowed at the apex where it is scarcely pointed, the apical margin therefore being broad and rather flatly arched (fig. 38); a short distance from the apex there is a short distinct central keel; viewed from the side this keel appears as a strong triangular tooth on the inner face of the median lobe opposite the apical part of the paramere (fig. 36); the paramere reaches nearly to the apex of the median lobe and is similar to that of *maritimus* Motschulsky in form, but has the apical part longer and parallel-sided; there is a faint trace of a suture on the inner face near apex; the pegs are very minute and indistinct, but apparently central near the apex. The tooth-like keel of the median lobe renders this species distinct from all others here described and easy to recognise.

Holotype ♂, SENEGAL. Paratype ♀, same data. Both in British Museum (Nat. Hist.).

9. *Gabronthus oribates* (Jeannel & Paulian).

Jeannel & Paulian, 1945, *Mém. Mus. nat. Hist. nat., Paris* (n.s.) **19**: 88.

This species I only know from a female cotype in the British Museum. From the figures given by the authors the paramere is of the *maritimus* form,

but the species can be distinguished from this and all other species with similar type of paramere by the fact that the median lobe has a pronounced blunt hook on the outer face near the apex.

The species scarcely differs from *turneri* but has the elytral puncturation a trifle finer and closer; it is, however, easily distinguished by the aedeagus, which, apart from the hook on the outer face of the median lobe, has all the pegs on the paramere apical, only one pair, the apical, being marginal, whereas in *turneri* all three pairs are marginal.

G. oribates is described from CAMEROON.

10. *Gabronthus tenuissimus* (Tottenham).

Tottenham, 1949, *Trans. R. ent. Soc. Lond.* **100** : 344.

11. *Gabronthus minutissimus* (Bernhauer).

Bernhauer, 1915, *Ann. hist.-nat. Mus. hung.* **13** : 143.

These two very small species closely resemble each other in the form of the aedeagus. The paramere is of the *maritimus* form, but the median lobe has a central ridge and lacks the arcuate lateral ridges of that species; the pegs are apical as in species of the *maritimus* group. Having examined only one *tenuissimus* and four *minutissimus* I am not in a position to say whether there are any specific differences in the arrangement of the pegs, for they seem to be somewhat variable in the latter species. The species may be separated from one another by the sculpture of the elytra which is very fine and moderately close in *tenuissimus*, more or less like that of *fundator*, whereas in *minutissimus* it is less fine, more irregular in size and sparser, more in the nature of that of *pluvialis* but sparser and more superficial. *G. tenuissimus* is described from Natal and *G. minutissimus* from German East Africa.

12. *Gabronthus turneri* (Tottenham).

Tottenham, 1949, *Trans. R. ent. Soc. Lond.* **100** : 344.

This species, described from Natal and not to be confused with the "*Philonthus* (*Gabrius*) *turneri*" Cameron (1950, *J. E. Afr. nat. Hist. Soc.* **20** : 403, nom. praeocc.) from Kenya belongs to the group without lateral ridges on the median lobe; it closely resembles *oribates* and *chyuluensis* (q.v.). The aedeagus may be distinguished easily from the allied forms (*chyuluensis*, *kosanus*, *gombanus* and *kosanus*) by the fact that all the pegs on the paramere are marginal, on each side one near the apex, one near the widest part and the other mid-way between these two (fig. 47).

13. **Gabronthus gombanus** sp. n.

Very like *thermarum* Aubé, but from the structure of the aedeagus more closely related to *kosanus* sp. n. and *turneri* Tottenham.

The puncturation of the elytra is diffuse, much stronger than in *turneri* and from this species it may also be recognised by its longer antennae with less transverse penultimate

segments and with lighter basal segments, by the paler brown posterior margins of the abdominal tergites and by the much stronger, sparser and more regular puncturation of these tergites. The aedeagus is very like that of *kosanus* sp. n. and the arrangement of the pegs on the paramere is the same, namely three pairs situated one on margin at widest point, one about one-third the distance between this and the apex, also marginal, and one a considerable distance basal to these, central. In both species the apical part is more or less triangular, i.e. the apex a point, but in *kosanus* the sides are a little dilated before they narrow to the apex, slightly angled, whereas in the present species they are not dilated, almost parallel until they narrow (fig. 45). The median lobe is of the same form in both species, that is to say drawn out to a blunt point at the apex as in *maritimus* Motschulsky, but without the arcuate side ridges and with a small tubercle in the middle of the inner face. This tubercle is not apparent in the lateral view and does not stand out as a large triangular tooth as in *kisiranus* sp. n. In *gombanus* the apical part is shorter than in *kosanus*, measured from the tubercle being twice as long as it is broad at the tubercle, whereas in *kosanus* it is only one and a quarter times as long as broad.

Holotype ♂, ABYSSINIA: Djem-Djem Forest, x.1926 (*J. Omer-Cooper*). In British Museum (Nat. Hist.).

14. **Gabronthus kosanus** sp. n.

Very like *G. fundator* sp. n., but easily distinguished by the puncturation of the elytra and the form of the aedeagus.

Body entirely black, the antennae black with the first segment brownish, the legs brown with the tibiae blackish. Differs from *fundator* in its darker legs, its very diffusely punctured elytra, which are equally finely punctured, and in the more strongly punctured abdomen. The aedeagus has the paramere slightly dilated before the apical portion, which is somewhat of the form of an equilateral triangle; the pegs on each side are situated: one marginal at the widest point, one marginal between this and the apex, and one basal to these at the centre (fig. 48). The paramere is much less pigmented apically than basally, there being a distinct line of demarcation between the pigmented area and the apical part, level with the basal pair of pegs (shown by dotted line in fig. 48). Median lobe distinctly pointed (upper view) and with distinct central keel or elongate tubercle about the level of the apex of the paramere.

Holotype ♂, KENYA: Muguga, ii.1953 (*V. F. Eastop*). Paratypes ♂, ♀, same locality but 1–20.viii.1953. In author's collection.

15. *Gabronthus chyuluensis* (Cameron).

Cameron, 1942, *Ann. Mag. nat. Hist.* (11) **9**: 329.

This species is extremely like *G. turneri*, but has the elytral puncturation much finer and very much sparser; it also closely resembles *fundator* sp. n. but the elytra are more strongly and more sparingly punctured. From *turneri* it may easily be distinguished by the paramere which has only two pairs of marginal pegs, one at widest part and one between this and apex, the third pair being central, some distance basal to the others (fig. 46). The paramere therefore resembles that of *fundator*, but it reaches nearer to the apex of the median lobe than in that species, and the median lobe (viewed laterally) has a longer and more slender, not enlarged apical portion (fig. 34).

The species was described from KENYA: Chyulu Hills.

16. **Gabronthus fundator** sp. n.

Of the size and general appearance of *G. turneri* Tottenham, but easily distinguished from that species by the form of the aedeagus.

Head parallel-sided; the antennae constructed as in *turneri*, black, sometimes with the first or first and second segments brown; legs variable in colour, yellow-brown to dark brown with the tibiae distinctly infuscate; elytra more finely and much more closely punctured and the abdomen also a little more finely punctured than in *turneri*.

Male: Eighth sternite feebly emarginate on apical margin, behind the emargination with a triangular depigmented area. The aedeagus (fig. 33) viewed from its side has the median lobe not reaching so far towards the apex as in *turneri* and the paramere is much more slender, with the apex very bluntly pointed; the paramere has only the first two pairs of pegs marginal, the third pair central and considerably basal to them.

The species may be easily distinguished from *kosanus* sp. n. which occurs with it, by the close, fine puncturation of the elytra and by the form of the paramere. The closer and finer puncturation of the elytra will also distinguish it from *chyuluensis*, which species it closely resembles in the form of the aedeagus; the paramere, however, is less sharply pointed and does not reach so far towards the apex of the median lobe, which has a shorter and stout enlarged apical portion (lateral view).

Holotype ♂, KENYA: Muguga, ii.1953, (*V. F. Eastop*). Paratypes, same data, 2 ♂, 1 ♀. In author's collection.

(b) *Oriental Species.*

Key to the males.

In the following key I am including *thermarum* Aubé because it has been so widely recorded, but I have seen no specimens from the East which are really that species.

1. Paramere furcate . . . . . [**thermarum** (Aubé)]
   Paramere simple 2
2. Median lobe with apex very broadly rounded, width at apex of paramere about equal to distance between the apices of paramere and median lobe . . . . . 7. **styx** sp. n.
   Median lobe strongly narrowed to apex which is sharply pointed or drawn out to a rounded point; width at apex of paramere much less than the distance between the apices 3
3. Median lobe with arcuate ridges on each side of paramere, drawn out into a bluntly rounded point at apex (upper view). (Puncturation of elytra rather close and fine) . . . . . 1. **inclinans** Walker
   Median lobe without lateral ridges but with a longer or shorter central keel on inner face 4
4. Pegs on paramere distant from one another, marginal, long and distinctly visible from side view; central keel on median lobe long, black, very crenulate or tuberculate. (Puncturation of elytra very sparse, pronotum widened in front) . . . . 6. **corrugatus** sp. n.
   Pegs on paramere close together 5
5. Median lobe (upper view) drawn out at apex into a blunted point and with central keel long, black and rather crenulate . 5. **thermaroides** sp. n.
   Median lobe (upper view) with apex acutely pointed, without long crenulate ridge but with a short keel or elongate tubercle about level of apex of paramere 6

6. Median lobe (upper view) with apex drawn out into a long extremely narrow, almost hair-like, point, with the narrowed sides slightly concave. (Head with a conspicuous sulcus between the eyes) 2. **sulcifrons** Sharp

Median lobe (upper view) with apex pointed but not drawn out into point, narrowed sides not at all concave, apex evenly narrowed . 7

7. Aedeagus short and broad, apex more or less an equilateral triangle. (Size very small, antennal segments very transverse) 3. **pygmaeus** Kraatz

Aedeagus very slender, apex an isosceles triangle with altitude much greater than base. (Size very small, antennal segments feebly transverse) . . . . . 4. **minusculus** sp. n.

1. *Gabronthus inclinans* (Walker).

Walker, 1859, *Ann. Mag. nat. Hist.* (3) **3** : 51.

This species, of which the type is in the British Museum, is quite distinct from *thermarum*, with which it has been synonymised, and is more closely related to *maritimus* Motschulsky. It may be known, however, from that species by the sparser puncturation of the elytra, and possibly also by its smaller size. It is larger than *pygmaeus* and has a broad head and pronotum ; there is no trace of depression on the front of the head. The aedeagus is of similar build to that of *maritimus*, but the apex of the median lobe is a little less pointed (fig. 54) and the paramere is more narrowed apically ; the arrangement of the pegs is the same and the median lobe possesses similar lateral ridges to that of *maritimus*.

This species seems to be common in the East, occurring in Ceylon, Sumatra, Java.

I believe that *angustatus* Kraatz is the same species. In the British Museum there are five cotypes of Kraatz's species, but they belong to three different species ! One specimen is *pygmaeus* Kraatz, one is the species I am describing below as *minusculus* and the other three are *inclinans*. It is impossible to be quite sure as to the identity of Kraatz's species from his description. It is said to differ from *pygmaeus* in being " duplo major, dilutior, antennarum segmentis vix transversis."

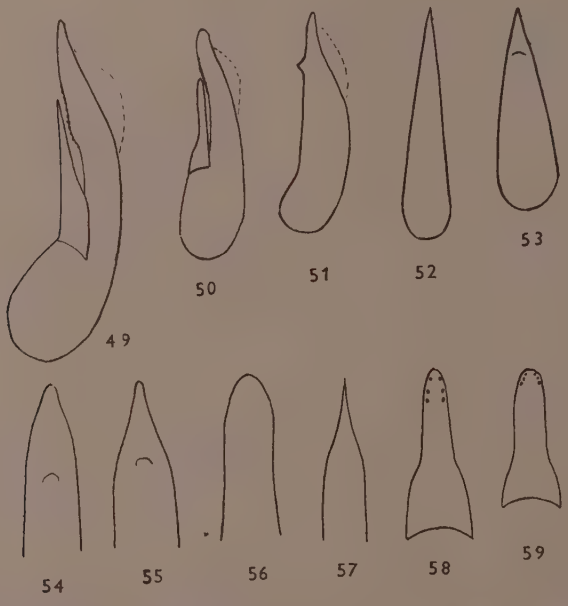
The specimens which I am regarding as typical of his species are considerably larger than *pygmaeus*, and one of them may possibly be described as paler, but colour in these species is variable. The specimens I am describing as *minusculus*, however, answers better to the remark about the antennae, but is no larger than *pygmaeus*.

2. *Gabronthus sulcifrons* (Sharp).

Sharp, 1889, *Ann. Mag. nat. Hist.* (6) **3** : 39.

This species has been wrongly placed as being the same as *thermarum* Aubé. It resembles that species in size, but the puncturation of the elytra is a little more uniform and regular and the aedeagus is of quite a different structure.

The elytral puncturation is more sparing than in *maritimus* Motschulsky. The head is more quadrate than in *thermarum*, not narrowed anteriorly, with a distinct, rather large depression in front. This depression will also separate the species from *inclinans* Walker, which it much resembles. The aedeagus has the median lobe (upper view) drawn out into a long point (fig. 57), narrower and more drawn out than in *pygmaeus* Kraatz, the whole lobe not so narrow and less regular in outline than in *minusculus* sp. n. In the centre there is a ridge, visible also in the lateral view as a dark, slightly arched, feebly crenulate line. The paramere is narrowed to the apex, where there are two rows of pegs, normally it would appear there are three in each row but one sometimes missing. The species occurs in Japan.



Figs. 49–59.—(49)–(51) Aedeagus, lateral view, of: (49) *Gabronthus corrugatus* sp. n.; (50) *G. thermaroides* sp. n.; (51) *G. styx* sp. n. (52)–(53) Median lobe, upper view, of: (52) *G. minusculus* sp. n.; (53) *G. pygmaeus* (Kraatz). (54)–(57) Apex of median lobe, upper view, of: (54) *G. inclinans* (Walker); (55) *G. corrugatus* sp. n.; (56) *G. styx* sp. n.; (57) *G. sulcifrons* (Sharp). (58)–(59) Paramere of: (58) *G. corrugatus* sp. n.; (59) *G. thermaroides* sp. n.

3. *Gabronthus pygmaeus* (Kraatz.)

Kraatz, 1859, *Arch. Naturgesch.* 25 (1): 93.

This name, also, has been wrongly placed as a synonym of *thermarum* Aubé. There are five cotypes in the British Museum and it is on the strength

of these specimens that I am retaining the species as distinct. The species may be known by its very small size (2·5–3 mm.), by its rather short elytra which are very finely, superficially and rather sparingly punctured, by its short antennae with compact transverse segments, as well as by the colour of the head which is somewhat brownish, distinctly lighter brown in front ; sometimes also a very slight depression may be detected in front, especially if the head be viewed obliquely. The aedeagus is short and has the median lobe rather broad, narrowed to a fine point at the apex and with a central keel (upper view). The paramere is rather pointed at the apex and in the single male cotype examined has only two pegs at the apex, but in my Philippine specimens there are 3 pairs arranged in two short parallel lines down the centre at apex. Whereas in *sulcifrons* Sharp the apex of the median lobe beyond the apex of the paramere is a tall triangle with its height fully twice its base, in *pygmaeus* it is much shorter, the height being only about one and one-third times the base (position of apex of paramere marked on figure) (fig. 53.)

The species occurs in Ceylon and the Philippines.

4. **Gabronthus minusculus** sp. n.

This species comes nearest to *pygmaeus* Kraatz ; it is described here on a single specimen which stood as one of five cotypes of *angustatus* Kraatz.

It may be distinguished from *pygmaeus* by the puncturation of the elytra, which is a little sparser and which consists of larger punctures ; the antennae are distinctly longer, less compact with the segments less transverse. In particular it may be known by the aedeagus which has the median lobe (upper view) very narrow, gradually narrowed to a point at the apex, the contour being even (fig. 52). The narrowness and the even contour will distinguish it also from the other species with similar median lobe ; like the others it has a central keel. The paramere is rather pointed and the pegs form a circle, the two apical pairs being marginal and the basal pair towards the centre.

Holotype ♂, Ceylon. Unique. In the British Museum (Nat. Hist.).

5. **Gabronthus thermaroides** sp. n.

Very similar to *thermarum* Aubé and probably often confused with it in collections, differing chiefly in the structure of the aedeagus.

It differs from *thermarum* in its slightly smaller size, larger head, which is scarcely narrowed in front and which is more quadrate although the hind angles are rounded as in *thermarum*. The elytra are rather variable in puncturation, often more diffusely punctured than in *thermarum*. The antennae are shorter with segments 4–10 distinctly more transverse. The antennae are darker with the first two segments brown and sometimes also the third brownish black ; the legs also are a little darker, with all the tibiae infuscate.

The aedeagus has the paramere simple, not furcate as in *thermarum*, with a short median line at apex and with three pairs of pegs near apex (fig. 59) ; the median lobe is narrowed apically (upper view), in the lateral view it shows a large broad apical region which is crenulate (fig. 50).

Holotype ♂, PHILIPPINE ISLANDS : Mindanao, Momungan. In the author's collection. Many paratypes in author's collection ; paratypes also in British Museum (Nat. Hist.).

6. **Gabronthus corrugatus** sp. n.

Very closely related to *G. thermaroides* and very difficult to distinguish from it except by the aedeagus.

It differs in its generally lighter colour, the pronotum being brownish-red, distinctly lighter than the head, the head is generally distinctly brown on the vertex, the elytra are generally a little lighter than the pronotum ; the puncturation of the elytra, although not close, is much less sparse than in *thermaroides*. The aedeagus has the median lobe of similar form to that of *thermaroides*, but is a little more drawn out into a point at the apex (viewed from above) and the crenulations of the central ridge are more evident ; viewed laterally the apical enlarged part is a little longer ; the paramere has the pegs arranged in two longitudinal rows near the apex down the centre, each row consisting of three pegs, and the pegs are widely spaced in each row, whereas in *thermaroides* they are close together (fig. 58).

Holotype ♂, PHILIPPINE ISLANDS : Luzon, Los Banos. Paratypes, same locality, 6 specimens ; Laguna, 2 specimens. In author's collection.

7. **Gabronthus styx** sp. n.

Distinguished from *thermarum* by its shorter much broader head which is parallel-sided and as wide as long, black.

Pronotum very broad, not much longer than broad, with sides parallel, the discal series each consisting of five strong punctures. Elytra shining, pitchy to reddish-brown, becoming paler red-brown towards apex, especially at apical external angles, a little longer than broad not much widened behind ; the puncturation of the elytra is much like that of *sulcifrons* but distinctly larger, close, somewhat irregular in spacing and size. Abdomen black, dull, with puncturation extremely fine and extremely close. Legs pale brown, with tibiae slightly infuscate apically. The antennae are constructed as in *thermarum*. In the shape of the head the species comes nearest to *sulcifrons* but lacks the central furrow. The aedeagus (figs. 51, 56), has the median lobe very like that of the African species *kisiranus* Tottenham in form ; the paramere is a little narrowed and bluntly rounded at apex, apparently without pegs.

Holotype ♂, SIBERIA : Amur (*Dr. D. Sharp*). Unique. In British Museum (Nat. Hist.).

NOTE ON THE TWO FAUNAS.

Since *thermarum* has been recorded as cosmopolitan, *mgogoricus* occurs in Seychelles and *maritimus* in Mesopotamia, there is the possibility that these three species should also be included in the oriental list. *G. thermarum* I have included in the key, although I have as yet seen no specimens from the East. *G. mgogoricus* would come in the key along with *styx*, but is unlikely to occur

along with this species ; the almost parallel-sided apical part of median lobe with truncate apex would distinguish it from *styx*, which has the median lobe broadly rounded ; also the paramere is of a different shape. *G. maritimus* would come under couplet 3 in the key along with *inclinans*. The aedeagus is very much alike in both species, but in *inclinans* the median lobe is less pointed ; the elytra in that species have a larger puncturation which is much sparser (more like that of *thermarum* than that of *maritimus*) and the abdominal tergites are a little more closely punctured.